DIGITAL Journal

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IN THIS ISSUE

IDRA/ADRS Message 4

Packet Power 6

Data Speed Tests 7

The Contest Chair 10

IDRA on the Internet (pt. 2) . 12

DX News 14

Contesting 16

Coherent CW 18

Digital DXing 19

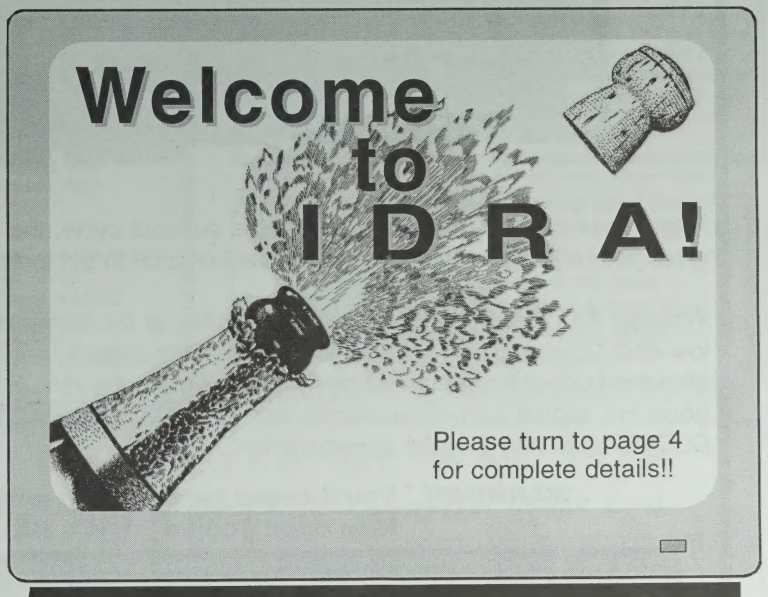
30 Years of Contesting 21

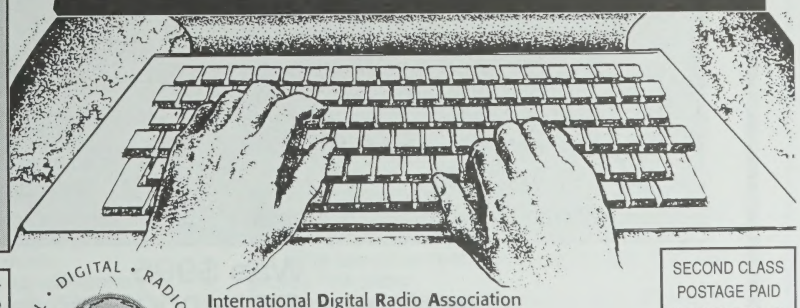
Digital Digest 22

Software Store 27

The Last Word 28

Classified Ads 29





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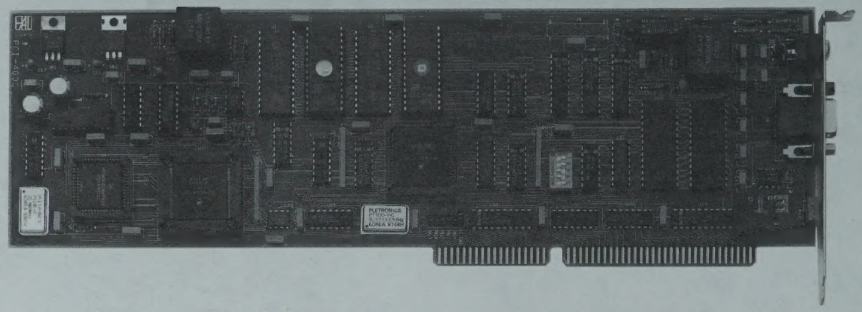

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The principal goal of the IDRA is to advance digital technology as it applies to amateur radio and promote the wisest use of the digital portion of the spectrum. Being a member makes you a partner in advancing these digital goals. IDRA is a not-for-profit corporation and contributions to the Society are deductible for income tax purposes to the extent allowable under the tax laws of the United States.

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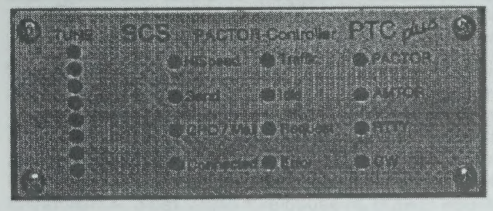

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ADRS Board Split On Mission - IDRA Formed

Digital Journal becomes publication of IDRA!

Message from the presidents of both groups follow

Message from the president of ADRS

By the time you read this message you will have heard that ADRS has split into two organizations. One will be called IDRA (International Digital Radio Association) and the other ADRS (American Digital Radio Society). As president of ADRS, I owe you an explanation.

The original ADRS was founded in 1992 by a small group of hams who believed that existing organizations did not adequately represent the interests of the digital community. At that time, the FCC was addressing the issue of automatic digital transmissions at HF. Historically, there had been unattended operation of RTTY and AMTOR mailboxes and BBS's since the 1960's. Technically speaking, these mailbox operations violated FCC rules concerning unattended operations.

ARRL filed a petition with the FCC to authorize fully automatic operations on HF in specific subbands. The ARRL petition did not address the problem of the unattended mailbox even though its digital committee had recommended that such unattended operation be permitted. There was considerable apprehension that the FCC would not address these questions. As a consequence, ADRS was founded to provide the needed input on this matter.

ADRS filed a petition with the FCC to authorize the use of unattended BBS and mailbox operations. This petition was not only for the benefit of BBS operators but also for the large number of keyboard operators who retrieve messages from such mailboxes. As a direct result of the ADRS petition, on July 1, 1995 unattended BBS and mailbox operation was sanctioned by Part 97.

The founders of ADRS firmly believed that the organization should be a forum for digital technology in amateur radio, actively support new ideas and development in that area, exchange information in support of digital technology and maintain a fair and balanced attitude toward all aspects of amateur radio.

The acquisition of the RTTY Journal changed the focus of ADRS. I believe that this was a natural result of the organization being more driven by the economic realities of the publishing business than the goals stated above. In my opinion we became more involved with various operating modes such as contesting and RTTY Dxing and less in maintaining a balanced attitude toward all aspects of digital radio. A majority of the Board (before the addition of two new members at Dayton) thus voted to sell the Journal. Many of the directors felt that the sale of the Journal would allow the organization to return to its stated goals. After the election of the new members, the Board became deadlocked on this issue and a sale was not possible.

After much negotiation it was agreed that there should be a split between those who wished to retain the Journal and those who believed that it should be independent of ADRS. The technical way of handling this was to change the name of ADRS to IDRA. IDRA would take with it the Digital Journal and all its related activities. The six directors who wished to sell the Journal agreed to resign and form a new corporation. On June 2, 1995, American Digital Radio Society (ADRS) was incorporated in Delaware. Its directors are Bob Bloodinginger W4NPX, Jim Jennings KE5HE, Frank Moore WA1URA, Steve Waterman K4CJX, Nick Zorn N4ZZ and myself. Four of these

*Message from the president of IDRA**

There has been a parting of the ways, a point of divergence and it is one of great moment. The very issue leading to the creation of the ADRS is the very same one that now brings division. In the beginning, a small group of people, mostly BBS sysops, formed the Society in order to add strength, substance and meaning to a petition subsequently filed with the FCC. The petition had to do with their opposition to pending rules seen as a basic threat to the freedom of the semi-automatic BBS operator to operate anywhere in the HF digital spectrum. In the end, after a long wait, the ARRL agreed with the ADRS and so did the FCC. Everybody won, or so it seems.

In the eyes of some, actually one half of the ADRS Board of Directors, the original purpose of the Society had then been fulfilled. Activities such as the Digital Journal, RTTY contests, the Software Store, Technical Forums and the Internet Page had no place in their vision of what the ADRS should be or do in the future. In fact they voted to put the Journal up for sale! Four of the six people involved are founding members and are by any measure entitled to their convictions, have served the ADRS well and deserve our respect and friendship.

The only problem is that the other half of the Board is diametrically opposed to such a view. They see an expanding range of activities built around a core called the Digital Journal, as the future of a thriving organization geared to represent the keyboarder's interests, wherever in the world the keyboarder may be. And the Journal's growing American and International membership attests to the need for this mixture of journalism and on on-the-air activity designed to make the digital world more fun and more technically satisfying. This group, equally distinguished, were convinced there could neither be a Society without the Journal . . . nor a Journal without the Society.

This irreconcilable difference of opinion, which first emerged at the Board Meeting in October 1994, dominated the discussions at Dayton. Since Dayton, hundreds of E-mail and telephone messages have made the rounds seeking an amicable common ground or, at least, an amicable solution. In this final chapter, there is no common ground but there is a friendly solution that will let each group go their own way, remain friends and avoid further conflict.

Six directors left the Board to form the new group. They are Warren W2NRE who contributed so much time and effort in the early months of the ADRS, Jim KE5HE who gave much to the Journal and to the Software Store, Frank WA1URA, Steve K4CJX, Bob W4NPX, all active BBS operators and Nick N4SS, the public service activist. This group will soon form a new not-for-profit organization to be called the American Digital Radio Society.

The other six, Paul W4ZB, Al W2TKU, Peter TY1PS, Joel KI4T, Barry VE3CDX and Jules W2JGR simultaneously become the governing body for IDRA and will focus on the Digital Journal and all of its related activities. The first order of business, already taken, is the change of name to the International Digital Radio Association. Discussed as long as a year ago, this move is perfectly appropriate for an organization such as this for the Journal maintains a global editorial approach and a sizable share of its membership lies outside the borders of the USA even now. The Board has also asked that Jim N2HOS continue to manage the editorial affairs of the DJ as Editor-in-Chief. He accepted without delay. In the near future, responsibility for the business affairs of IDRA will be assigned to one of its directors.

(Message from the president of ADRS - cont'd)

directors were among the six founders of the original ADRS two years ago. All six of us wish the IDRA and the Digital Journal continued success in carrying out the traditions started by the RTTY Journal.

My second purpose in writing to you is to invite you to continue to be involved with ADRS as represented by the new organization. We will carry out the same mission statement that we had when the organization was formed two years ago. Reiterated: ADRS should be a forum for digital technology, actively support new ideas and development in that area, encourage exchange of information in support of digital technology and maintain a fair and balanced attitude toward all aspects of amateur radio. We will look for innovative ways to achieve these goals. We will represent the digital community in regulatory matters and we will encourage amateurs to become interested in digital technology. The annual dues will be nominal and we will waive the dues for the balance of 1995 for anyone who is a member of ADRS or a subscriber to the Journal at this time. To become a charter member, send a post card with your name, callsign and the word YES to Bob Blodinger, 5003 Madison Ct, Charlottesville, VA 22901.

I thank you for your past support of ADRS and look forward to working with you in the future.

73 de Warren Sinsheimer, W2NRE

(Message from the president of IDRA - cont'd)

There will be no relationship (corporate or otherwise) between the two groups, nor between the Digital Journal and the newly formed ADRS. The IDRA assumes all of the existing operations, assets and liabilities of the corporation, the Journal and all the other activities . . . and moves ahead as though nothing had changed but the name. And that is exactly what has happened. The name is changed and nothing else!!

All of this will be done as quickly as possible. The change to IDRA became effective May 25, 1995. The ADRS name has been released to the new group. Each group wishes the other well. This friendly parting comes at a time when the activities of the Journal and the organization have reached a level of success well beyond our modest early hopes. And that, of course is the time to part, for each party may justifiably claim full credit, while neither need accept blame. Bon voyage ADRS!

**Note: In their first meeting (via E-Mail and fax confirmation) since the reorganization the IDRA Board appointed two directors and a slate of officers. Returning to the Board were Jay WS7I and Jim N2HOS. Paul W4ZB was elected President, Jim N2HOS Vice President and Al W2TKU Secretary-Treasurer. All appointments and elections are in force only until a full meeting of the board in the fall of 1995.*

Welcome to the International Digital Radio Association!!

73 de Paul Richter, W4ZB

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CQ Communications, Inc., publishers of CQ magazine, today announced the introduction of online ordering for its magazines, books, videos and other products. The online ordering system is available to anyone with access to Internet e-mail, and is designed to combine added convenience with a high level of security.

"This system opens the doors of CQ's bookstore to the whole world," says CQ Communications Marketing Director John Dorr, K1AR." As a major publisher in the field of hobby radio, CQ offers a wide array of books, videos and magazines to the radio hobbyist. Plus, because CQ is also a dealer for other major publishers, we can offer online ordering of publications from the ARRL (American Radio Relay League) and RSGB (Radio Society of Great Britain), among others."

Accessible 24 hours a day, users of the CQ online ordering system place their orders via e-mail directly to CQ headquarters in New York, where staff members receive and process them. CQ Online Services Coordinator Rich Moseson, NW2L, explains that the system's security lies in the signup process.

"It's really quite simple. Customers sign up by requesting an online application form via e-mail. They provide their mailing and credit card information on that form, which is then returned to us by fax or regular mail — not by e-mail. We assign a customer number, which is the only information that ever travels on the Internet. And since we'll only ship to the address on the application form, there's no incentive for anyone to use someone else's customer number."

The CQ Online Ordering System is available now. Signup applications may be requested via e-mail only, to any of the following addresses: CQ@genie.geis.com, CQMagazine@aol.com, NW2L@aol.com, 72127.745@compuserve.com, or p00259@psilink.com.

Packet Power

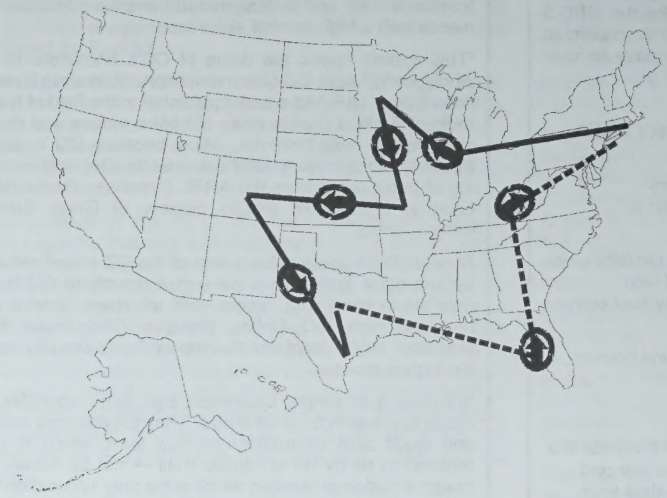
Tips for the new and seasoned packet user

©1995 by Dave Wolf, WO5H dba Maingate Resources
P.O. Box 189, Burleson TX 76097-0189 / CompuServe ID: 73427,2246

One-Way Forwarding

Do you ever get frustrated by *one-way message forwarding* using packet? More specifically, does it seem like you can always get your message delivered to a buddy across the country, but never seem to get a reply (even though he swears he is sending one)? One of the problems that plagues packet bulletin board message forwarding is the one-way phenomenon. It is not a figment of your imagination; it does exist.

One-way forwarding exists because of the method that is used by packet bulletin board software to hand off messages from one board to another. When messages are forwarded, there is no pre-planned routing. If you reply to a message that has come from a distant board, your reply does not automatically take the same route back from whence it came. It can (and usually does) take a totally different route. This is called *asymmetrical routing*. The following diagram illustrates this principle.



A hypothetical message originating from a user of my BBS in Texas with New York as its final destination, might go through a wormhole to Tampa, then up to Kentucky and finally to New York. A reply might take an entirely different route. It goes to Chicago, to Minneapolis, to Missouri, to Colorado, to Houston and then through the Internet to Dallas/Ft. Worth.

Several things should strike you about this routing, and should make you ask some questions. It isn't difficult to recognize that it takes a lot more time for the reply to traverse the packet network than the original message took. It also should be apparent that the return route is mighty fragile. With all those extra stations handling the message, it is possible that the reply could more easily get 'lost' than the initial message. Then again, one never really knows.

This map could easily represent the path of two messages from my BBS to New York, sent one day apart. It could be that on day one the wormhole to Tampa was up and running. Perhaps the next day the wormhole was unavailable and the outgoing message had to take a different path.

The major point that this segment makes is that there is no master plan for the routing of messages by packet radio. Message forwarding is like crossing a stream by jumping from rock to rock without knowing whether there are enough rocks available when you start out. You have to look around for the next best rock to jump to without losing sight of your objective. Some streams are a little deep and there are not always good rocks to jump to.

Hurricane Season

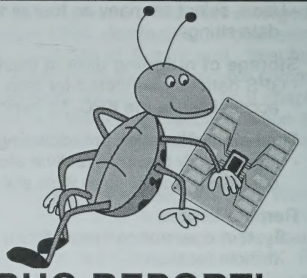
If you're looking for an alternative use for your multi-mode packet controller (KAM, PK-232, etc.) and you have an interest in keeping track of hurricanes, you are in luck! Pop that controller into the AMTOR or WEFAX modes and tune your HF rig through some of the commercial frequencies. You can obtain WEFAX pictures from CFH (Halifax) on 4270, 6330, 10536, 13510 kHz. There are SITOR (use the AMTOR mode!) from WLO on 4462.5, 6344, 8534, 12992, 16997.6 kHz. You might find some more frequencies on which you may capture some good weather-related news and pics. Drop me a note c/o Packet Power, PO Box 189, Burleson, TX 76097-0189, and I'll publish your discoveries in upcoming Packet Power columns.

A Real Privilege

It is an honor and a privilege to share news of my election to President of the Texas Packet Radio Society. TPRS is the largest regional packet organization in the US and operates the largest packet network in the world, TexNet. For more information about TPRS or TexNet, write: Texas Packet Radio Society, PO Box 50238, Denton, TX 76206-0238.

Until Next Month

There are more things to do with your packet TNC than simply log into your local BBS or Packet Cluster. What other operational activities are you using your TNC for? APRS? Weather monitoring? RACES/ARES? NTS? Let me hear from you! Until next time, 73 and keep using your *Packet Power*!



BUG REPORT!

This concerns Express 2.0 and RagChew, software programs widely used with the HAL PCI4000 or P38 computer cards. When you install RagChew first and then Express 2.0 some files get mixed up. RCW will not then work correctly. So, install Express 2.0 first and then RCW and all will be well. This bug will not apply to the soon-to-be-released Express 3.0.

Data Speed Tests

A comparison of the HF PACTOR & G-TOR Modes

by Marvin Bernstein, W2PAT/AFA1DA
1137 Hope Road • Tinton Falls, NJ 07712-3162

Air Force Mars has used the Packet mode for some years both on VHF and HF to communicate between member Stations. The Packet mode does not work well on HF, so with the Pactor and G-tor now available, and currently being used by the Amateurs on their frequencies, a decision was made to evaluate these modes for possible Mars use. Two AF Mars frequencies were used for these tests and the frequencies were approximately 17.5 and 7.8 MHz. The tests ran for more then four months and approximately three million bytes of ascii data was sent from the Mars station in New Jersey to the two other Mars members in Florida. The test results do show that Pactor is much faster than Packet. And that with "good" signals, G-tor is about 70 percent faster than Pactor. With weaker signals, however, G-tor data speed falls at a faster rate than Pactor and it appears that with very poor signals, both have almost similar speeds. Test data obtained from this extensive period of testing, is shown in the following several tables and graphs and explained in some detail.

Test Methods
The testing procedure during the whole series of data speed tests was for the Station in New Jersey to link to one of the Florida Stations and send a prepared file of ASCII data. Almost all of the characters were lower case with the normal few upper case characters at the beginning of sentences, or where otherwise appropriate. After the link was established with the BBS, or MBX of the Florida Station, the file was sent and the time required determined with a stop watch. Huffman encoding was used both with Pactor and G-tor tests.

The first files were less than 2K bytes in length but as these early tests showed that the data speed was much faster than packet, file lengths were increased to 8 to 9 kilobytes. Both Pactor and G-tor have a feature that when turned on, show when the first characters are received. And the /ex used to close the file at the BBS was used to show the end of the file. Tests made locally, with two controllers wired together, pactor mode only, indicated an accuracy of elapsed time determination of about a half second.

The first tests were made on a frequency of approximately 17.5 MHz and later tests were continued at a lower one. The 17.5 MHz frequency is unusable for much of the day because of the present low sun spot cycle. Furthermore, very severe short wave BC QRM was noted. For those reasons, permission was granted by the National RTTY Net Manager to use the 7.8 MHz frequency for more detailed testing.

All tests of Pactor and G-tor were made in the "linked" condition with the ARQ system used. Evaluation of the data speed figures was done both by using the Standard deviation (1 sigma) method and also by sorting the speeds from low to high and plotting the distribution values. Another useful graphic method of showing the speed data was to plot the average speed versus the received strength of the signals using the S-meter readings.

Discussion:
There were a series of tests made beginning 27 May 1994 which ended on 22 September 1994. The first tests used the Pactor mode since the intent at that time, was just the evaluation of the speed of this mode. The information obtained with the early tests showed the vastly improved performance of this mode compared to HF Packet. Written articles in the Radio Magazines indicated that G-tor was very much faster and better then Pactor, so beginning in July, a test started using this new mode.

All tests were conducted on the 17 MHz frequency until Mid-August when permission to use the 7.8 MHz frequency was given by the Tcon Ratt Net Manager. Also, since this frequency was useful at all hours of the day, unlike the higher frequency, schedules were made to begin tests at 7 AM and 9 PM EDT. One other change was to alternate Pactor and G-tor modes during each test rather then use the system previously, where tests were made for a short period of time on one mode, and then changing to the other mode and continuing with the tests.

The statistical use of Standard Deviation, one sigma, does result in information that improves the interpretation of usefulness of the test data in comparing the speed performance of the two modes under test. It is very obvious that HF propagation conditions, and electrical noise has an effect on the data speed. The result of severe noise causes the data being changed so severely that the error correcting system used in both modes fails. This frame must then be repeated and with weak signals, this effect was frequently noted. A second kind of statistical treatment of tabulated data is the use of the distribution of the values. In these tests, it requires the arrangement of the speed data values in order of the lowest to the highest speed, and then plotting these groups. It does need a much larger number of tests so the final and best data was obtained from almost three hundred separate tests of Pactor and G-tor on the 7.8 MHz frequency.

What this final test shows is that the use of the Pactor mode on HF does result in data that has a more "normal" appearance when it is graphed. The G-tor mode indicates that the data speed varies much more due to conditions typical of HF operation with both multipath and QRN then Pactor. These results are consistent with the larger numbers for the Standard Deviation shown for G-tor compared to Pactor.

Test Results:
NON-RADIO SPEED TEST
A series of tests were made to determine the speed of two systems that were connected together with wires, so that perfect audio signals were used. This test requires the use of two computers and two controllers.

MODE	BAUD RATE	SPEED IN BYTES PER MINUTE	
PACTOR,ARQ	200	1555.4	(HUFFMAN ON, 9K FILE)
PACTOR,ARQ	200	962.2	(HUFFMAN OFF, 9K FILE)
PACTOR,ARQ	200	1290	(lower case qbf 1850 bytes)
PACTOR,ARQ	200	980	(UPPER CASE QBF 1850 BYTES)
PACTOR,FEC	200	698	(lower case qbf 1850 bytes)
PACTOR,FEC	200	516	(UPPER CASE QBF 1850 BYTES)
AMTOR,ARQ	100	360	(lower case qbf 1850 bytes)
AMTOR,ARQ	100	344	(UPPER CASE QBF 1850 BYTES)
PACKET	300	672	(lower case qbf 1850 bytes)
RTTY	75	541	(lower case qbf 1850 bytes)

G-tor tests of that kind could not be made because only one controller of the Kam plus was available. The QBF files used had 24 lines of the quick brown fox rtty test and each line had 77 characters.

The four following TABLES show the information derived from the separate Pactor and G-tor tests. The speed test results from both of the Stations in Florida have been combined to provide an improved average value of the data. It should be pointed out that the whole test consisted of 441 separate contacts, and that a grand total of almost 3.5 million bytes of ascii files were transmitted. This test was an extended investigation which ran for just over four months of elapsed time and covered the period when lightning storms are very frequent in Florida. Observations of the effects of QRN on the speed of any HF Data mode, indicates that it can be very destructive, and often completely blanked the ACK/NAK response from the Florida Stations. The four Tables contain the Statistics of the individual series of both modes and both frequencies used during the test, along with the time duration of it. All three Stations had about the same power output of about 80 Watts on both test frequencies.

Tables One and Two contain the information on the results of the tests made on the 17.5 MHz frequency. Since the actual frequencies used are Military but assigned for use by the AF Mars Members, they cannot be disclosed. Tables Three and Four show the data for the tests made on the 7.8 MHz frequency, and this test series was much more rigorously run. Unlike the earlier tests, when the HF Propagation prevented any kind of scheduled operations, the lower frequency used for this series allowed scheduled tests to run at 7 AM and 9 PM each day.

TABLE ONE

PARAMETER	VALUE	UNITS
TOTAL TESTS MADE	80	-----
TOTAL BYTES SENT	276,039	BYTES
AVERAGE DATA SPEED	1142	BYTES/MINUTE
STANDARD DEVIATION	263	BYTES/MINUTE
MINIMUM DATA SPEED	323	BYTES/MINUTE
MAXIMUM DATA SPEED	1501	BYTES/MINUTE
SLOWEST 10% SPEED	599	BYTES/MINUTE
FASTEST 10% SPEED	1460	BYTES/MINUTE
POWER OUTPUT	80	WATTS
TEST DATES	27 MAY TO 25 JULY, 1994	
TEST FREQUENCY	17.5 MHZ	
TEST MODE	PACTOR	

TABLE TWO

PARAMETER	VALUE	UNITS
TOTAL TESTS MADE	75	-----
TOTAL BYTES SENT	630,433	BYTES
AVERAGE DATA SPEED	1748	BYTES/MINUTE
STANDARD DEVIATION	529	BYTES/MINUTE
MINIMUM DATA SPEED	756	BYTES/MINUTE
MAXIMUM DATA SPEED	2702	BYTES/MINUTE
SLOWEST 10% SPEED	829	BYTES/MINUTE
FASTEST 10% SPEED	2554	BYTES/MINUTE
POWER OUTPUT	80	WATTS
TEST DATES	14 JULY TO 22 AUGUST, 1994	
TEST FREQUENCY	17.5 MHZ	
TEST MODE	G-TOR	

TABLE THREE

PARAMETER	VALUE	UNITS
TOTAL TESTS MADE	141	-----
TOTAL BYTES SENT	1,271,783	BYTES
AVERAGE DATA SPEED	1282	BYTES/MINUTE
STANDARD DEVIATION	185	BYTES/MINUTE
MINIMUM DATA SPEED	626	BYTES/MINUTE
MAXIMUM DATA SPEED	1541	BYTES/MINUTE
SLOWEST 10% SPEED, AV.	881	BYTES/MINUTE
FASTEST 10% SPEED, AV.	1510	BYTES/MINUTE
POWER OUTPUT	80	WATTS
TEST DATES	15 AUGUST TO 22 SEPTEMBER, 1994	
TEST FREQUENCY	7.8 MHZ	
TEST MODE	PACTOR	

TABLE FOUR

PARAMETER	VALUE	UNITS
TOTAL TESTS MADE	145	-----
TOTAL BYTES SENT	1,277,979	BYTES
AVERAGE DATA SPEED	1992	BYTES/MINUTE
STANDARD DEVIATION	488	BYTES/MINUTE
MINIMUM DATA SPEED	570	BYTES/MINUTE
MAXIMUM DATA SPEED	2797	BYTES/MINUTE
SLOWEST 10% SPEED, AV.	1011	BYTES/MINUTE
FASTEST 10% SPEED, AV.	2672	BYTES/MINUTE
POWER OUTPUT	80	WATTS
TEST DATES	15 AUGUST TO 21 SEPTEMBER, 1994	
TEST FREQUENCY	7.8 MHZ	
TEST MODE	G-TOR	

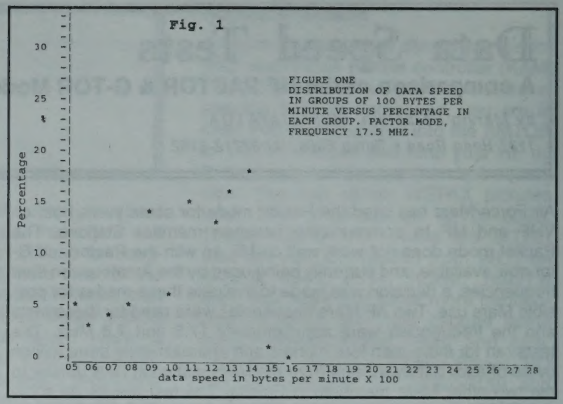
The following four graphs illustrate the distribution of the data speeds after the values had been sorted from the lowest to the highest speeds. One of the useful tools in the statistical evaluation of all types of data, is to plot the grouped values against the percentage in each group. One requirement, however, is that a large number of data values must be used, and that is the reason the much more rigorous test was made on the 7.8 MHz frequency.

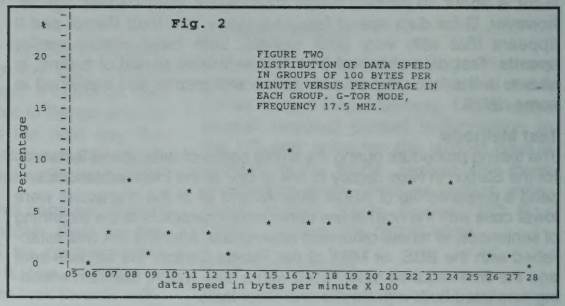
Figures One and Two

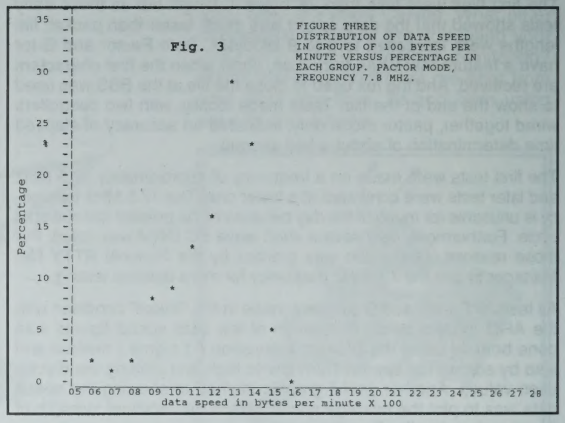
These two graphs can be used to compare the performance of Pactor and G-tor data distribution and neither graph has a form that could be called " normal distribution ". Pactor does show a large percentage that is grouped between 1100 and 1400 bytes per minute of 62 %, however. Figure Two, G-tor, does not indicate any particular form at all, with the percentage of data speeds varying widely from as low as 800 to a high of 2400 bytes per minute. Radio conditions were very poor on the 17.5 MHz frequency and interference from the Short Wave Broadcast Stations did cause problems at times. It is believed that much of this wide dispersion of the data speeds was due to these causes.

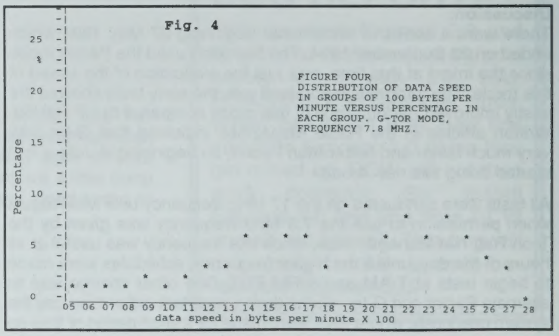
Figures Three and Four

Figure Three is the distribution of the data speeds for the Pactor mode with the tests performed on the 7.8 MHz frequency. 29 percent of the data speeds are in the range of 1300 to 1399 bytes per minute. And another 16 percent fall in the range of 1200 to 1299 but what is really of great importance is that 23 percent are in the range of 1400 to 1499 bytes per minute. This then shows that 69 percent of the 141 separate data speed tests range between 1200 and 1499 bytes per minute. Figure Four shows the test results for the G-tor mode. Because of the better conditions on the 7.8 MHz frequency, and more tests, there is a more uniform distribution of the speeds then shown in Figure Two. However, this mode again does not show a pronounced peaking of the percentage like that shown for Pactor. There is a peak of 9 percent for data speeds of 1900 to 2099 and









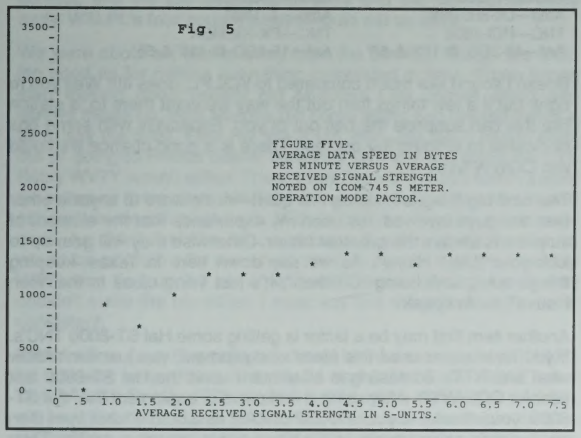
what appears to be a peak at the speed of 1500 to 1599 bytes per minute. This graph shows all the data speed results from the 145 separate test runs which were made in the same time interval as those shown in Figure Three for the Pactor mode.

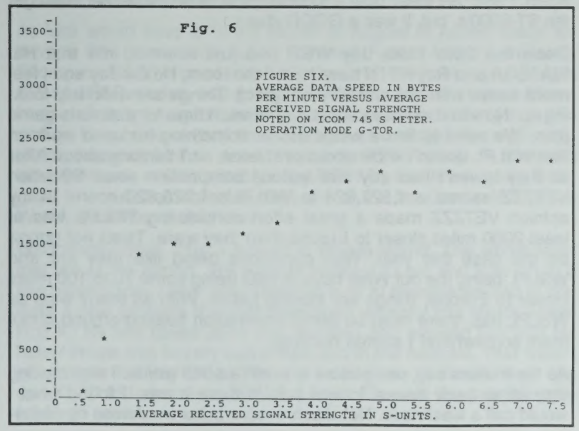
Figures Five and Six

These two figures show the relationship between the RECEIVED signal strength, as indicated by the S-meter reading, of the Station sending the test file. Since at many of the times of test, there was no operator at the BBS , no TRANSMITTED signal strength readings were possible. It is believed that the received signal readings are a useful estimation of the quality of the high frequency transmission conditions. The system for obtaining this information, was to read back the last few messages contained in the BBS after the file had been sent to the other Station.

Figure Five is the average observed S-meter reading for the Pactor Mode and shows that a data speed of 900 bytes per minute was achieved at a meter reading of just one S unit. However, that falls to 700 bytes at 1.5 S units, so obviously there is some randomness at very low signal strengths. From S 2 units upwards, the speed increases rather quickly to the maximum possible with the Pactor Mode, which is about 1499 bytes per minute.

Figure Six is the same form of the relationship of signal strength to data speed for the G-tor Mode. Of interest in this graph, is that at one S unit, the speed is slightly slower, at 600 bytes per minute. How significant this is can only be determined with more tests because of the randomness of the test results at low signal strengths. It should be noted however, that in the range of meter readings of S 1.5 to 3.5 there is a plateau which does correspond to the secondary peak of distribution speeds shown in Figure Four. It is believed that this is due to the fact that 300 Baud data speeds on HF is pushing the limit and as a result, G-tor falls back to 200 Baud and requires the transmission of additional data frames. Another indication that G-tor develops increased speed with outstanding signal strengths, is that the maximum possible speed, of 2499 bytes per minute is accomplished only at S 7 and 7.5 meter readings.





Conclusions:

Pactor in its present form, is a faster HF mode then any of the older means of data transmission. This report of the extensive testing has resulted in statistical data useful for evaluation of any future improvements in this system. The average speed of data transmission on HF is probably in the range of 1150 to 1300 bytes per minute with a Standard Deviation value of 250 with poor signals and slightly less then 200 for moderate signals.

G-tor is even a better system for HF data transmission with an average data speed of from 1700 to 2000 bytes per minute, again much dependent on signal strength. The Standard Deviation values are larger for this mode, and range from about 530 for weak signals and 488 for moderate signals.

As a result of this extensive series of HF data transmission testing and evaluation using statistical means, it is believed that the Pactor Mode could have increased speed using longer data frames. Furthermore, it is also indicated that perhaps G-tor could be improved by switching from 300 to 200 Baud more quickly at low signal strengths.

This investigation of the data speed of Pactor and G-tor was intensive. It is believed that the results of this long test could be useful in the evaluation of expected further development of improved HF data mode systems.

ACKNOWLEDGEMENTS:

I wish to acknowledge the dedication of Bud Campbell, WB9OML/AFA2FK and Dick Lamberson W4WEB/AFA2QG for their help in making this test possible. These two members showed great effort in meeting the scheduled test times and changing the DATA MODES as required. The series of tests on 7.8 MHz were especially difficult for those members during the last 45 days. Each test day started at 7 AM and required about 30 minutes of time to complete. For part of this series of tests, additional tests of the two modes were made a 30 minute intervals until the last one was made at 9:30 AM. At 9 PM of the same day, the second tests of that day were again run with both Stations. Further, I wish to acknowledge that the suggestion for running the Pactor test was made by Gar Harris, W6AXM/AFN6AT/AFA6CC, the National Advanced Techniques Net Manager.

About the author: Marvin Bernstein, W2PAT

1932 First licensed W8DLU, Buffalo, N.Y.

1933 Colonial Radio Corporation, trouble shooter, left 1941.

1941 Signal Corps Engineering Laboratories, Fort Monmouth, N.J. For 30 years, involved in the development of improved test equipment for quartz crystal units, oscillators and quartz crystals. Issued three patents related to quartz crystal that were assigned to the U.S.Government. From 1962 to 1971 was also a Member of the Nato Group of Experts on Frequency Control Devices and attended Technical Meetings in Paris, Brussels and London.

1972 Retired from Federal Civil Service, GS-13 Electronic Engineer.

1973 Employed at the Hecon Corporation, Eatontown, N.J. as the Engineering Lab Supervisor. Issued one patent for a device to control the number of copies from a Copier Machine, using a small UP/DOWN Cmos Counter. This patent was assigned to the Corporation.

1983 Retired.

The Contest Chair

Hints, Tips & Inspiration for Better Scores

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Hello Contesters/DXers. Here it is July already and next month brings the SARTG contest. Conditions should start to improve slowly, or at least a few of our propagation experts are predicting gains. SARTG is a super contest with everyone having the same off times and it's a lot of fun. Lets all get in there and give SARTG a try.

After many requests for me to write an article about our efforts to win CQ/DJWW Multi/Multi category at K1NG last September, I decided to do it, if for no other reason than to see if we can stir up more interest in the M/M category. It isn't very often you have a chance to compete against a big stations like W3LP. They don't enter that many RTTY contests. It's a lot more fun when when you can compete with several stations in your category. With current conditions it is very possible for as few as two or three people to turn in a very competitive score in Multi/Multi category. Instead of entering Multi/Single category, you should try M/M. You will get in a lot more operating time and it's a lot of fun. On top of that you might just pull it off, and win! :-) Here is our story of what we did to try and win the CQWW M/M category last September.

For many years I've dreamed of winning or being part of a contest team that wins the biggest RTTY contest of them all—the CQWW DX Contest. In my opinion, there are many good or even great contests to win (including the new WPX test), but none like the CQWW DX Contest. To win this one you need to wage all-out WAR for 48 hours! Like what Saddam Hussein once said, "The Mother of all WARS". I've seen big guns stations like "W3LPL" win this contest year after year in every mode they've tried. Every now and then someone will slip in there and pull the rug out from under them and win this great contest. I want to be that rug puller, or at least one of the rug pullers. But nobody has been able to pull the rug out from under them, in RTTY mode, quite yet!

I was talking with Jay WS7I one day about this very subject. A good conversation started, about going to Galapagos Is. or maybe Ecuador, doing a M/S or a M/M. Jay and I talked about this several times on the phone. We also talked about doing a multi/multi from the U.S. to see if we could knock W3LPL off his throne, even if it was for no longer than just one year. Where could we go to do this? I mentioned Gordon N5AU (it has been done from Texas, N5AU did it back in the Eighties, on SSB). I even talked to Ray WF1B, to see if he was interested in coming to Texas.

N5AU is definately a Big Gun station—some 20 towers, 6 element Telrex beams on 10-15-20, stacks fixed both horizonally and vertically in all directions, top beams rotatable, with 2 over 2 on 40 meters, an additional 3 element 40 meter beam on another tower. Two or three 180' towers, that simply hold up 80mtr. wire antennas! Definitely not a bad idea. I told Jay I'd check on N5AU.

Unfortunately station N5AU is in need of real serious repair. A station of this size requires almost constant maintenance. Gordon is involved in building a station in VP2E land. Besides all that, just getting in touch with Gordon is next to impossible, I never did talk to him personally. Oh well, even if we did get to use N5AU, with W3LPL on the East Coast, It would be "possible" but very tough to win.

One day Jay called and said, "What about the station that Ray WF1B used in the CQWW RTTY contest?" Good idea! Thats K1NG and he's on the East Coast and puts us about 75 to 100 miles closer to Europe than W3LPL. I told Jay I would call Ray and see what he thought about doing a Multi/Multi next Sept. in CQWW '94. Ray had mentioned once that he wanted to do another single/op. Somehow I had to convence him that '94 may not be the right year to do a S/O. :-)

I called Ray on the evening of December 13,'93.. Surpriseingly enough, Ray thought it was a great idea. I didn't even have to beg, plead or THREATEN. He would present the purposal to John K1NG. About an hour or so later, Ray called, telling me that John wanted him to give me his phone number. Things are looking up. I called John the next evening. He sounded like a great fellow and was looking forward to the competition.

He told me he had really built his station for a Multi/two type competition, then asked what I thought we would need to do this job. I figured with conditions like they are, we wouldn't need more than a four station setup, putting 10m & 80m on same station, John agreed. The next big thing we would need is the very best ops. we could get. At this point we had K1NG, WF1B, KI1G, AB5KD, WS7I, WV7Y. If we could get Roy KT1N, Jeff K1IU, Don AA5AU, Eddie G0AZT (any of these ops I would love to get) then maybe Jay could talk Hal WA7EGA in to coming. "WOW what a team". If we are gonna take on the Big Boys, you have to have dedicated operators. If we get even some of these ops mentioned above, we just might pull this operation off.

Now lets take a look at K1NG's station, what has it got to offer:

Station-1 (20 Meters)	**Station-2 (80/10 Meters)**
Radio—FT1000	Radio—FT1000
Amp—LK780	Amp—LK550NT
TNC—PCI-3000	TNC—PCI-3000
Beams—204BAS @ 130' & 70'	Beams- 2 Elem 80M Beam @ 107' & 3 Beverages. 10-4CD @ 80' & 45'.
Station-3 (40 Meters)	**Station-4 (15 Meters)**
Radio—TS930	Radio—TS940
Amp—LK-800TNY	Amp— L-1500
TNC—PCI-4000	TNC—PK-232MBX
Ant—40-2CD @ 112' & 60'	Ant—15-4CD @ 110' & 55'

Doesn't sound like much compared to W3LPL, does it!!! Well you're right, but if a few things turn out the way we want them to, a station like this can supprise the hell out of you. Especially with some ops dedicated to winning the contest. There is a good chance we could win CQWW M/M.

The next big thing is keeping this quiet—not a word to anyone other than the guys involved. It's been my experience that the element of surprise is always the greatest factor. Otherwise they will gear up to kick your "Little Hinny". As we say down here in Texas, keeping things quiet, isn't being "Chicken". It's just living close to the "Hen House", so to speak.

Another item that may be a factor is getting some Hal ST-8000 TNC's. If you have never used this piece of equipment, you just don't know what real RTTY contesting is all about. I used the Hal ST-8000 last year for CQWW'93. After using a real piece of equipment like the ST-8000, you will refer to your PK-232 or KAM as a boat anchor from then on. I've truly never used a better piece of equipment in my life. Then again, I also use these boat anchors myself. hi hi (Note: We didn't get the ST-8000's, but, It was a GOOD idea.)

December 20th 1993, Jay WS7I has just informed me that Hal WA7EGA and Roy KT1N have joined the team. I know Jay and I feel much better with Hal and Roy on board. Things are definitely looking up. Now that we have some operaters, it time for a serious game plan. We need to find a weakness or something for us to work on that W3LPL doesn't know about or at least, isn't thinking about. After all they haven't had any real serious competition since '90 when VE7ZZZ scored a 1,522,824 to W3LPL's 1,726,620 score. In my opinion VE7ZZZ made a great effort considering W3LPL was at least 2000 miles closer to Europe than they were. Thats not gonna be the case this year. With conditions being like they are and W3LPL being the out West boys, K1NG being some 70 to 100 miles closer to Europe, things are looking better. With as many wins as W3LPL has, there must be some information floating around about them somewhere! I started hunting.

As the Indians say, one picture is worth a 1000 words. I was looking thru some back issues, lo and behold there it was. I found what I would call a weakness. Not much of one, but a weakness neverthe-

less. Here is where we will start. I got very back issue of every magazine that had any information about W3LPL's station, antennas, operators, equipment, software, anything and everything that might help us find another edge. When your out-gunned as much as we were, you hunt for anything that would help. Frank W3LPL, not being a guy to get caught with his pants down, there just wasn't that much I could find, in the weakness category, nothing big amyway. I only came up with five small things I thought might help us win the contest.

So we have to go with what we have, and maybe pray for heavy Ice storms in Maryland. hi hi (After all fair is fair, Ray was doing the Roundup'94 contest from K1NG and had to quit early Saturday evening because of elements falling in the yard and rotors freezing up, due to heavy ice storms.)

April '93 Dayton Convention—I had never met Ray, Jay, Betsy, or Roy. All would be at Dayton, it would be fun to see their views of how to do this contest. It worked out that we all had pretty much the same ideas. I must add there was some serious doubt that we could pull this off.

May 2nd—much time has passed. Jay & I have been working on the upcoming new IDRA[1] WPX Contest. Dayton has come and gone, we have done much talking on the subject of CQWW'94 and what we want to achieve. Jay and I talked again in Dallas at the Ham-Com Convention about things and discussed things the others had mentioned.

John K1NG, Rick KI1G & Ray WF1B, have been working like crazy to get all the Antennas back in shape after the winter months. John has a new 80m boom ordered for the 80m beam, we all are praying it will be delivered in time for the contest. I was espically worried with John way out in Seattle, Washington on business, for what seemed to be months. If the 80M boom didn't get deivered in time for the contest, and the low bands open early and the high bands close early, W3LPL's four square arrays would eat us alive.

We were about six weeks away from the contest. Things are looking good as for getting everything completed in time. When things start looking good usually old Murphys Law comes along and screws things up. Well Murphy did come along and twisted things a bit to say the least. First Hal WA7EGA then Jay WS7I had to back out of going to Rhode Island. Naturally with Jay not going his XYL Betsy WV7Y wasn't either. There goes three of the ops within a matter of two or three days. Hal fell from a tower some years back and seriously messed up his back. With all his traveling around on business, he didn't feel like he could make the trip, and if he did he would be on pain pills the whole time. A couple of days later Jay WS7I was tied up on some kind of business arrangements and couldn't make the trip either. I must say one thing for Murphy, he is consistent.

Within a few days Ray called and said he had recruited Jeff K1IU. I for one was very glad to hear that. I had called Eddie G0AZT and Don AA5AU. Don and Tiffany, had just bought a new house and didn't feel like they could go at that time. Eddie was planning a DXPedition and contest trip to 8R land the very next month, so he couldn't go either. I was zero for two.

As luck would have it, in the month of August in Austin Texas we have a little convention called Summer Fest. I found out Randy Thompson K5ZD,a good friend of mine and well known contester in CW and SSB modes, was going to be in town. He now lives in Mass. I was definitely going to take him out for lunch. After talking in Austin and on the phone several times he agreeded to take the night shift, mainly because he had never ever done RTTY before. A man with his experience could probably copy RTTY by ear. It was going to be great to know that while we slept one of the best contesters in the World, would be at the helm.

Wednesday Sept. 21st, I arrived in Rhode Island. The whole team met me at the airport. We went to Hooters to eat and later on to a few other places I was rather fond of. hi hi At Hooters we had to discuss a new problem that just developed. Murphy has struck again. Roy KT1N had called John that morning and advised him that his father in-law was in very bad shape and in the hospital. That wasn't good news for Roy or us. We now were down to five full time ops and K5ZD to help out on Saturday night. Oh well, the only thing we could do now was, just grin an bear it.

I stayed with Jeff K1IU and his XYL for two days and nights. I might add, Jeff has a very nice station of his own. Jeff and I played on the bands so I could see what the bands were like from the East Coast.

Friday morning Sept. 24, we all went over to Johns house, several of us wanted to check out the bands. I especially want to check out the FT1000. I had never used one before. Ray also showed us the mult computer named Betsy, in honor of WV7Y, who was going to be our Mult/Manager before Jay WS7I had to drop out. Betsy the computer would talk to you. She would let you know when new mults were spotted, she would say things like, "Yoooooo Texas connection 20 meters and give the call and Frequency," or whatever band the spot was for. I learned to love Betsy over the next 48 hrs. The only bad part about her was that she sounded just like Ray!!!!

Just before the contest started a decision was made to let the home town boys lead off in the contest. With conditions like they were John felt the home town boys probably could milk the high bands and know where to put the beams. Conditions for the high bands were pitiful, at best. It was gonna be a low band show all night! Friday evening I almost lost the faith, figured I had made a serious mistake, even coming with conditions like they were. I really didn't know what I was expecting from R.I. But I though it should be better that what I was getting.

Saturday morning things were definitely different, I sat down at the 20 mtr station and was blowing and going. I got the faith back in a matter of minutes. I ran Europe for three maybe three and a half hours with no stateside calls logged, and they were all three pointers . You can't do that from Texas, I assure you. I had never had this much fun with my clothes on, and still be in the U.S. No wonder these guys kill us in a DX contest. I was ready to DEFECT to the East Coast. Thats a serious statement to make when you're from South Texas. You could be barred from returning to the state!

During most of the contest we kept tabs on LPL's station with one VFO, just to see if our rate was keeping up with them. On Saturday evening I heard LPL turn his beams toward the West and start to run the U.S. I looked at the time and we ran Europe for 45 minutes longer than they did on 20M, on Saturday. At exactly 0059 UTC the band died. I couldn't hear a darn thing in any direction on 20 mtrs. It was almost like God we made enough noise for one day and slammed the door shut. It was time to hit the sack for a snooze.

Randy K5ZD walked in a few minutes later to take charge of the night shift. Randy, Rick and Jeff stayed fairly busy most of the night on 40 an 80. Ray also stayed pretty busy. Saturday night was the night for us to screw up the software. I think Ray got a new name of YoYo because of all the times he had to get up an go fix something we screwed up.

Sunday morning, 20 opened up early for us. We almost got caught with our pants down. I'm not sure how long it was open before we checked to see if anything was happening. Things *were* happening and we went back to work. The thing that I had a hard time with from R.I. is that most of the time we used the lower beams for running Europe on 20mtrs. Early in the morning and later in the evening we went to the high beam. Thats something we don't have a problem with in Texas. We turn on everything we have and wish we had more to turn on most of the time. Most all day Sunday Rick and I had big runs and we hunted for new mults with the second VFO, also checking on LPL's crew to see if we were still staying with them. I figured we had to be ahead of them on 20mtrs if nothing else. On several occasions I made two or three contacts to their one. I got the feeling they had the Sunday afternoon blaws. I remember telling John that I didn't think W3LPL ever knew we were Multi/Multi. If they did, we wouldn't have been able to make two and three contacts to their one.

On 15 Jeff had some fantastic runs and picking up a bundle of mults. All of us had a nice time on 15 but Jeff made the best runs and got the most mults. Sunday afternoon 40 had some activity. Also Ray picked up several band mults that wasn't expected. Rick sat down at the 10 meter station and picked up a fair amount of mults on 10. Rick is one of these guys that has a nose for mults, he can smell them somehow!!! Until Rick went to 10mtrs on Sunday afternoon we only had about 10 or 15 contacts on 10M. We wound up with 66 QSO but most of them were mults. Thank you Rick! John K1NG was

(cont'd on page 30)

IDRA's presence on the Internet - Part 2

and the implications of the Internet to the future of digital mode ham radio operations

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The June, 1995 issue of The Digital Journal contained the first article in this series which describes the basic feature of IDRA's (formerly ADRS') then relatively new Internet presence which includes a WWW (World Wide Web) Server (at ttp://www.iea.com/~adrs) and an anonymous FTP Server (at ftp://ftp.iea.com/public/adrs). We also provided information on what the Internet is, and how its works and how a prospective user might obtain a connection to the Internet for individual use.

In this article, we provide updated and more detailed information on these and additional topics relating to digital mode ham radio operation.

Initial Usage History for IDRA's WWW Server.

Information about the IDRA's Internet address spread very quickly following the initial publication in the Digital Journal and in postings to the Internet newsgroups relating to amateur radio digital topics.

By the fifth week of operation of the IDRA's WWW Server (in early April, 1995), the number of user accesses to our pages averaged more than 4,000 accesses per week. The usage continues to increase rapidly. More than 6,000 accesses per week were occurring by the end of May. IDRA's WWW Server has a capability to accumulate these statistics together with the Internet address of each user accessing the system. Analysis of the data shows that users all over the world now know about this IDRA system!

This fast discovery rate demonstrates the high level of interest in the Internet on the part digital operators and the fact that the Internet offers immediate, high level utility for amateur radio operations. Those of you who have not yet tried this are missing out on the fun! We recommend that you get together with a friend who has tried it, or consider obtaining your own Internet access at least temporarily to try it out.

Update on obtaining a connection for Internet access.

Local access providers to the Internet are proliferating rapidly in all areas of the U.S. and Canada (and elsewhere in the developed areas of the world). The costs of basic SLIP/PPP services is dropping due to competition at least in the U.S. and Canada. Further cost reductions as well as service improvements will occur.

In parts of the U.S., for example, a 28.8 kbps SLIP/PPP Internet access connection now costs $20 per month for 50 hours of connect time per month (and $1 or less for each additional hour) and $50 per month for unlimited connect time (i.e. 24 hours per day, 7 days per week) for individual users. Most Internet access providers also charge a start up fee (frequently waived) and usually includes copies of the software needed to use the dial up access. Full time access may seem somewhat obsessive (and it probably is!), but some of the services now available relating to amateur radio could justify for some users a live Internet connection whenever the ham station is being operated. Further discussion about this later.

Access to an Internet connection is most commonly obtained over an ordinary telephone line to the Internet access provider (preferably at 14.4K baud, or higher). The power users will favor the use of more expensive, but considerably higher speed ISDN lines (more on this later). In more populated areas, it should be possible to locate one or more Internet service providers with local telephone access numbers so that long distance charges can be avoided completely. A typical service provider offers a month to month contract so the user may cancel service at any time.

In mid-April, 1995, Compuserve had just begun to provide SLIP/PPP connections for Compuserve users, and it was not clear at the that time what the real costs and capabilities would be. (Note: Last Word column for news of CompuServe's access). Compuserve was then somewhat behind (in time) compared to the offering from the other large on-line service providers such as Prodigy and AOL, but Compuserve's initial offering has now caught up. Existing users of such on-line service providers should consider signing up as the means to try out the Internet on a limited basis. If you become a heavy user, you will probably find you can save money by using a local access provider who caters to heavy users.

More Detailed Discussion of Hyperlinks

The fundamental aspect of the hypertext transfer protocol (HTTP) that causes many users of WWW Browsers to regard it as the new "killer application" is the ability for such systems to present and organize disparate information. A basic understanding of how such systems work is important. A more informed user will be better able to take advantage of the features present in a given system. Second, HTTP-like systems can now be implemented on small computer LANs such as those found in digital mode ham stations . . . even by those who spend a relatively small amount of time learning how these systems work. Additionally, HTTP-like approaches will no doubt be used in future radio-based information server systems—for example, present day DX PacketCluster and bulletin board systems.

A hyperlink is a word (or string of words) or a symbol (or image) on a WWW page which, when selected or "clicked" by the browser, causes the Page to immediately seek the information resource indicated by the hyperlink word or symbol. This may include launching a new application (e.g. FTP or Telnet) if required by the content of the hyperlink. Hyperlinks are created by embedding human readable symbol sequences (conforming to the HyperText Markup Language standard) in a WWW page file so that a WWW Browser can detect and properly interpret the hyperlinks. Several types of hyperlinks are of particular interest.

The simplest form of hyperlink points to information resources which appear elsewhere on the same WWW page (file) as the selected hyperlink itself. Such an "internal" hyperlink provides a means for internal indexing with a corresponding "jump to" capability for information. Everyone who has used Windows is familiar the hyperlinks in the Windows "help" system. Many of the WWW pages on IDRA's WWW Server contain examples of this simplest form of hyperlink. The current "Selected Technical Topics" WWW page, for example, is based upon a 30Kb text file. It contains HTML markups which create many internal hyperlinks to make it easier for a user to move around. A hyperlink table of contents near the beginning of the document creates hyperlink jumps to numerous other places in that relatively long WWW page. At each stage, there is always an opportunity for return to the table of contents on the first page of the document.

One interesting aspect of internal hyperlinks is that when in a document loaded as a local file into a Web Browser (Mosaic or its equivalent), they will be properly interpreted and be fully functional even though there is no connection to the Internet! This means that custom hypertext documents for reading on a Web Browser (without any Internet connection) may be easily created after elementary HTML mark-up has been mastered. (The IDRA WWW Server contains hyperlinks to detailed sources of information about the HTML mark up language.) Additionally, any WWW page which is accessed and then

saved as a local file on the user's computer may be later loaded and viewed in the Web Browser (without any Internet connection). All internal hyperlinks will be fully functional.

A second type of hyperlink on a WWW page is a hyperlink to another WWW page on the same WWW Server from which the original WWW page was obtained. This type of hyperlink is very common. For example, the start up or home page which you access when you initially connect to IDRA's WWW Server at http://www.iea.com/~adrs contains a table of contents which is nothing more than a set of hyperlinks to other WWW page files on the same WWW Server. This second type of hyperlink is also be fully functional and permits files to be read as local files in a Web Browser without any connection to the Internet. If the user is running his Web Browser on a DOS based computer, this statement assumes that the names of all files (and all hyperlink references to files) conform to DOS file name conventions.

A third type of hyperlink is one which contains a pointer to another information resource at another WWW Server. These type of hyperlinks are very common, but do require a connection to the Internet because the other WWW server which is referred to in the hyperlink must be accessed over the Internet. Incidentally, hyperlinks are not limited to references to just other WWW pages, but may also contain references to an anonymous FTP server, to a particular file on an anonymous FTP server, or to an Internet site which requires the use of Telnet. The types of files which may be referenced by a hyperlink include not only regular WWW pages, but also image files (usually in *.GIF format) and audio files. Hyperlinks may also be used to implement special calls to send e-mail or to send user-generated or user-specific information to the WWW Server through the use of "forms".

Recent Enhancements to IDRA's WWW Server

At the end of May, IDRA made major enhancements to its WWW Server to better serve the needs of digital mode DXers and Contesters. For those with digital mode DX interests, a new DX start page has been created with numerous hyperlinks to prior DX Bulletins and other DX information of interest. Jules Freundlich, W2JGR, has agreed to keep the hyperlinked DX Bulletins updated going back to at least the beginning of 1995. Future digital mode DX Bulletins from Jules should be posted on IDRA's WWW Server and be accessible worldwide immediately after being written! This will be a few weeks faster than you will otherwise see that in the Digital Journal, and faster than any other method of dissemination! We anticipate adding a special DX FLASH Bulletin page which can be updated every week or more as needed. IDRA also provides hyperlinks to other Internet sites of interest to digital mode DXers, including WebCluster sites.

For those with digital mode Contesting interests, a new Contesting WWW page has been created. This page is presented as a calendar of all important digital mode Contesting events for the next 12 to 15 month period. Hyperlinks are provided under each particular contest on the calendar so that the user may view the current Contest rules, comments about each particular contest by Rich Lawton, N6GG and/or Ron Stailey, AB5KD, and the results from the most recent contest (if available in electronic format). This new facility catalogs and makes all of this related information accessible in one place from anywhere in the world over the Internet!

Use of IDRA's Updated Anonymous FTP Server.

The preferred (easiest to use) entry point to IDRA's Anonymous FTP Server is now through IRDA's WWW Server. It contains a full explanation on-line of how to use the FTP Server, a complete directory and file listing (updated periodically) for the files available for downloading, and appropriate hyperlinks to the FTP Server. The IDRA WWW Server's technical information pages also contain numerous hyperlinks for automatic downloading of technical information files stored on IDRA's FTP server.

Most modern Web Browsers include support for automatic FTP downloading of files from hyperlinked FTP sources identified on any WWW Page. This includes the popular Browsers using Windows 3.X such as NCSA Mosaic, Netscape, Spry Mosaic, etc. These modern WWW Browsers make the use of anonymous FTP downloading extremely easy. Files may be selected by the user for downloading simply by "clicking" on a desired WWW Page hyperlink to a predetermined named file at a defined anonymous FTP site! Similarly, directories of files available for downloading on a hyperlinked anonymous FTP Server may be easily changed simply by "clicking" on directory names or symbols displayed on the Web Browser. A file once located on an anonymous FTP Server may then be downloaded via FTP by "clicking" on the filename!

The file directory structures have been rearranged to take full advantage of the descriptive file and directory naming capabilities on the Unix FTP Server. There is no limit to the length of file names. The newer graphical Web Browsers (and graphical FTP client applications) handle the differences in file (and directory) naming conventions very easily, sometimes automatically, in downloading files from the (Unix) FTP site to the user's DOS based computer. Users need to be aware that the directory (and file) names have been selected for maximum descriptiveness, and should avoid being confused by seeing directory and file names on the FTP Server which are not acceptable DOS directory or file names. A user connecting to IDRA's WWW Server can easily use his Web Browser to identify the files available on IDRA's hyperlinked FTP Server for downloading, then proceed immediately to download any selected files using FTP over the Internet.

We have received requests from a number of users to upload files which the users wish to share with others. Due to past problems with large "junk" files being uploaded by hackers, the administrator of the iea.com site will not permit anonymous uploading of files. Do not be discouraged because it is possible for a special uploading session to be arranged privately! If you would like to upload or have particular files made available to others by means of the FTP Server, send IDRA an e-mail!

Think About These Internet Ideas Now.

1. Use an Internet connection between two different QTHs to implement a digital link between the two locations either on a dedicated or as-needed basis. The digital link is used for forwarding of message traffic between the two stations when radio links are not available or reliable.

2. Use TCP/IP remote control software over a dedicated Internet digital link for a remote operator to remotely control the operation of a digital mode ham station. Off-the-shelf remote control software for use over TCP/IP connections exists and is as reliable as the better known remote control software which is used over dial up modems.

3. Use a voice or audio encoder/decoder to provide a digital voice/audio channel for use over an Internet connection between the two endpoints. By multiplexing the digital link, the voice/audio channels could co-exist with the remote control software operation.

4. Get contesting rules changed to permit a new category of "remotely controlled digital mode station" for each category. The actual station may be on the East Coast of the USA (or in a real DX location with Internet access) while the remotely controlling operator is at his home QTH (e.g. in Texas).

5. Use the Internet to combine and link together a series of DX PacketClusters into a central location so that all information is visible to the users.

6. Use an Internet connection to a Conference Bridge (such as the one provided by KO4KS) to hold live, over-the-air digital mode QSOs with stations in other locations.

7. Use an Internet connection to access precision time sources such as the Naval Observatory or NIST in Boulder, Colorado.

The next installment of this series will further develop these and other Internet related topics. If you have any questions or comments about Internet issues, please drop me a note on CompuServe.

73 de Paul, W4ZB

DX News

The latest digi-doings from around the globe

by Jules Freundlich, W2JGR • 825 Summit Ave., Apt. 1401 • Minneapolis, MN55403

Over the years, the pursuit of DX, in any mode, has taken many an unexpected turn. Initially there was the custom of tuning across a band listening for the weak signals, which were sure to be DX if they were just breaking through the noise. If you heard a DX station calling CQ, you would move off a few khz to a clear frequency and give him a call, hoping that in his tuning of the band he would spot you. After a while, the age of the transceiver arrived. This changed our calling and listening habits. Then, I think it was in the 1970s, we saw the advent of stations with good locations and big signals, volunteering to assist all who wished to be helped, in working a rare one.

My first experience with this type of operation was with Bill Bennett, W7PHO, now a Silent Key. Bill had a super radio location in Seattle, high on the side of a hill overlooking Puget Sound with a clear shot over water to the Pacific. His was a 20 meter SSB operation, with a 4 element monobander on a high tower, and plenty of power to go with it. He specialized in picking unusual DX stations in the Pacific and Far East. Propagation into the Europe/Africa sector was not particularly favorable from his location.

Would that the current so-called "net controllers" could emulate old Bill. He was a no-nonsense type. When the DX station had completed a contact, and no more callers were left on Bill's short list, he would stand by for callers, recognize one or two, and, when the frequency was clear, tell you to call the station. After that it was solely between you and the DX station. He did not assemble a daily horde of DX stations, nor did he attempt, nor encourage a multitude of stateside stations to come up. He coddled neither the caller or the callee. Most callers were serious DXers. Every day he carefully chose one or two rare or semi-rare ones to participate. If you attempted to tail end, or tried to inject yourself out of turn, you were politely told to "come back another day, old boy." Many of us, in those days, added significantly to our DXCC totals with Bill's help. If you were unsuccessful after a couple of tries, you could expect him to say something like "No soap, Lover Boy. Try again tomorrow." And so it went.

In April 1977 I had the opportunity, over a weekend, during a business trip to Seattle, to visit Bill and his XYL, Ruth, at their home. Bill and his wife were most gracious hosts, and invited me to attend a dinner meeting of the Western Washington DX Club. The after-dinner program was a slide presentation, by WA7LFD, on ham radio in New Zealand. It was a fine evening and I still can feel the warmth of the hospitality. A few years later it was our pleasure to reciprocate by hosting Bill at a dinner meeting of the Long Island DX Association, during his last cross country tour.

You did not find anyone bad-mouthing W7PHO, or his operation. He was a true helpmate who conducted himself with polite firmness and humor. He became a silent key, in the mid 1980's, while seated at his radio, doing his thing.

Times have changed. Technology to pursue DX has advanced at a breathtaking speed, particularly in the digital area. Two meter voice spotting developed in populated areas, mostly sponsored by local DX clubs. Aside from the appearance of error correcting, high speed digital modes, the single event, I think, that affected chasing DX the most, was the development of the PacketCluster(R) software by Dick Newell, AK1A. This singular development essentially obsoleted, in a matter of a couple of years, the 2 meter voice spotting activity. I recall when the first station using this software in the New York Metro area came on the air. I can't remember the callsign, nor the year, but he was located in New Jersey, and I had to do some digipeating to reach him from Long Island. It was a remarkable event. You could access him and learn, digitally, what DX was being reported in the area. To be sure, inputs were meager, and not always timely, but the concept was proven to be practical and useful. A few dedicated Sysops, recognizing the power of this technique, jumped in with significant amount of personal time and funds to acquire the software and hardware necessary to hammer out a concept for a local network. Included among that pioneering group were K2GX, KE2AY, K2RW, and KB2XL (now a SK).

Out of that single packetcluster station in New Jersey, grew the present Tri-State Packetcluster Network encompassing parts of New York, New Jersey and Connecticut. The growth from Local Area Networks (LAN's) into Wide Area Networks (WAN's), and the rapid adoption world wide of the Cluster software radically changed the way most of us find our DX these days.

Now, here in the Upper Midwest, my local Minnesota DX Packetcluster Network provides coverage from within my state. Through connection to a WAN it provides me information from adjacent states, and very often from East and Gulf Coast states. But that is not all. Read on to find out how I fell, by chance, into the wormhole universe.

As many of you know, I am one of three editors who produce, on a rotating basis, the weekly on-the-air VK2SG RTTY DX Notes. The other two editors are Luciano, I5FLN, in Florence, Italy, and Bob WB2CJL in Tonawanda, NY near Niagara Falls. Each Thursday evening, the first order of business is to distribute the Notes to the other two editors for further distribution, by each of them, on HF and VHF. HF propagation, being what it is, and what it is going to be for the next three to four years, often makes it difficult to do this initial distribution in a timely manner. A few weeks ago, I was unable to obtain the Notes from Luciano. Propagation was simply awful. The next morning I checked into the Internet for e-mail, and found that those Notes which I had been unable to find on HF, had been posted on the Internet by Tomo, JH2PDS/1. I asked Tomo how he had received them. He told me he had copied them from the "Italian Packet Cluster". Not wishing to sound too uninformed, I asked him how he had accessed the "Italian Packet Cluster". The answer came back "I connect to the Italian Cluster via telnet."

The IK5PWJ-6 Packetcluster, using AX.25 packet protocol on 2 meters, is accessible from the Internet using TCP/IP protocol, via gateway routing station IK5QGO. IK5QGO can also be called a Network Operating Station (NOS). For details on how to make this connection, see INTERNET APPLICATIONS at the end of this column. This is certainly an interesting amalgamation of technologies, software, and communications systems. The incident sent me back to the February 1995 issue of the Digital Journal. For an explanation of some of the possibilities this marriage offers, I reread the article entitled "TCP/IP, Wormholes and the internet" by Joe Kasser, W3/G3ZCZ on page 10 of that issue. Without realizing it, by following Tomo's simple connect instructions, I had unknowingly fallen into the wormhole universe. And it did not hurt a bit. As a matter of fact it felt pretty good! I have yet to exploit the full potential of this wedding of AX.25 and TCP/IP as described in Joe Kasser's article. That, perhaps, is a subject for a future column.

You may ask "Of what use to a stateside station is DX information reported on a local Italian VHF BBS?" There is no pat answer. It is akin to the complaints that were voiced when local VHF cluster networks in the USA expanded into WAN's. e.g. "What good does an East Coast DX input do me in the Upper Midwest, or West Coast?" Yet, even today we see DX spots from all over the USA and Canada still coming into our local cluster. If the application of the technology is useful it will thrive and grow, otherwise it will wither away from disuse, but only after Sysops have gotten over the euphoria of being on the leading edge.

Perhaps the ultimate packet cluster application is the OH2BUA WebCluster, which can collect information from local clusters worldwide, via the Internet. Technologically, the WebCluster is the natural progression from local and wide area networks to a higher level of networking. You could term it a cluster of clusters. It's main effect on me so far, has been to make me envious of all the DX that is out there, but which does not penetrate the RF curtain that seems, at times, to surround us here in the Upper Midwest.

The other side of the coin is to access the Internet with a hand held radio, with laptop computer, via a local BBS. I understand that is a well established procedure, although I have not experienced it myself. Tell me about it, folks. Drop me a note.

If you are in a travelling mood in late August, don't overlook the 1995 Fourth Annual New Orleans International DX (NOIDX) Convention running Friday 25 August and Saturday 26 August. This event, conveniently located in the south-central USA promises a variety of activities to suit your DX tastes, including a Hospitality Suite sponsored by the Delta DX Association. For info and registration contact Wondy Wondergem, K5KR at 504 837 1485 days, or 24 hour FAX at 504 524 2129.

DX DOINGS

(Signals are 45.5 Baud RTTY unless noted.)

Note that the DX Doings below include activity as reported from worldwide sources. Therefore, some stations may not be seen, in your particular part of the world, at the hours indicated. To make best use of the data given, couple it with your knowledge of propagation paths to your QTH. For help in this regard, see the monthly propagation charts in QST, and listen to the hourly propagation forecasts at 18 minutes past each hour on WWV. Good luck!

ANGOLA, D2 - Valy, YO3YX, will be in Angola for about five months more assigned to the United Nations there. He hopes for callsign to be YO3YX/4U or D2YX.

BOUVET, 3Y - UA9OBO and RW3GW (with others) left St. Petersburg in June to take part in a scientific expedition to the Antarctic lasting several months. One of the destinations of the expedition will be Bouvet island around the beginning of November 1995. Permission from the LA authorities has already been received. The call will probably be 3Y/R0FL. We look forward to receiving further details on this one.

CHAD, TT - Ken, WA4OBO is back in Charlotte, NC and reports that after two and a half years, and more than $1000 expense, he still has not been able to get the Chadian government to make the necessary changes to his TT8OBO license. Technical difficulties due to changes in local government have made it impossible to comply with changes requested by ARRL.

CRETE, SV9 - Look for SV9CVN on 20 meters around 2100Z. See QSL BUREAU NOTES below.

CYPRUS , 5B - 5B4WF likes 20 meters early in the UTC day, around 0745Z. QSL route is needed.

ETHIOPIA, ET - The legendary Sid May, ET3SID still occaisionally plays the keyboard on 20 meters around 2230Z. QSL to Sid T. May, Box 60229, Addis Ababa, Ethiopia.

FERNANDO DE NORONHA, PY0 - JH2MRA, Mr. Asaoda, recently operated as PY0ZFB. While there he discovered the attraction of RTTY. Without prior announcement, he was able to operate RTTY for only two days, and expressed surprise at the pileups, saying a RTTY pileup was different than other modes. 50 stations were worked in JA plus at least one in each USA call area. . He expressed the desire to return during his summer holidays in July or August of this year. The main modes will be RTTY and satellite. If you work him, QSL to his home CBA. Watch the weekly VK2SG RTTY Notes for details as they become available.

GHANA, 9G - John, 9G1BS keeps Ghana on 20 meter RTTY fairly regularly. Look for him between 2200Z and 0030Z. QSL to P.O. Box 3242, Accra.

KALININGRAD, UA2 - RA2FB AND UA2FGX both keep this tiny country active on RTTY. Look for them on 20 meters as early as 0900Z or as late as 1615Z. QSL RA2FB via CBA. QSL route for UA2FGX is needed.

KAZAKHSTAN, UN - If you worked Romeo, UN5PR operating Special Event station UP50P, QSL to Box 73, Temirtau City, 472300 Kazakh Republic.

KOREA, HL - HL5AWS is a regular on 20 meters between 1200Z and 1500Z. QSL route is needed.

MALAGASY, 5R - 5R8KH frequents 20 meters between 1500Z and 1700Z. QSL via WB8LFO.

MALAWI, 7Q - 7Q7LA keeps fairly active on Pactor. He may be found on 21069 khz around 1445Z, and on 14069 khz around 1000Z. QSL via G0IAS.

NEW CALEDONIA , FK - FK8GM and FK8HC can be added to the list of active 20 meter stations here. Both are active around 0330Z to 0430Z. QSL FK8GM to WB2RAJ. QSL route for FK8HC is needed.

NIGERIA, 5N - 5N0GC and 5N5FSR are two active stations on 20 meters. They operate mostly between 1900Z to 2000Z. QSL 5N0GC to F2YT. QSL route for 5N5FSR is needed.

OMAN, A4 - This small country is well represented by several stations. They include A41KT, A41LA, A45XC, and A41XH. They can be found almost any time of the UTC day, depending on propagation to your area. QSL routes are needed for all.

QATAR, A7 - A71A operates on 20 meters between 1700Z and 2230Z. QSL to Qatar Amateur Radio Society, Box 22122, Doha, Qatar.

ST. PAUL ISL., CY9 - AA4VK, WA4DAN, KW2P, W5IJU, and K4TVE will operate /CY9 from 27 July to 2 August. They will be all band 160-6 meters, SSB, CW, and RTTY with Yagi's and amplifers. Some satellite activity is also planned. The RTTY gear will be a HAL Telereader loaned courtesy of W6PQS and the International RTTY DX Association. Donations are neeed to offset the cost of shipping the antennas and generators. Callsigns to be used will be home calls /CY9. Contributions and QSL cards go to WA4DAN.

SOUTH SHETLANDS, VP8 -Andy, SP2GOW, operating as VP8CQS, at the Polish Base, continues to be very active on 20 meters between 1800Z and 2100Z. QSL to DL1EHH.

TANZANIA, 5H - Look for 5H3MS on 15 meters around 1345Z. QSL route is needed.

TONGA, A3 - A35CT continues to fill the need for this once rare one. A good time to find him on 20 meters is around 0400Z plus/minus. QSL to Box 2990, Nuku Alofa, Tonga.

TUNISIA, 3V - Dr. Selim, OE6EEG, and Drago, S59UN are planning an operation in Tunisia in August 1995. They have promised to include RTTY. Watch the weekly VK2SG RTTY DX Notes for updated information.

UK SOVEREIGN BASES ON CYPRUS, ZC - Actvity from this location has been somewhat sparse recently, but you may find ZC4DF on 20 meters around 1230Z. QSL to Box 2345, Larnaca.

VIETNAM, 3W - If you worked 3W5FM (or UA0FM/3W) in late April or early May, QSL Nickolay, P.O. Box 49, 693006 Yuzhno-Sahalinsk, Russia.

WEST MALAYSIA, 9M2 - Look for 9M2FO on 20 meters between 1645Z and 1715Z. QSL route is needed.

ZAMBIA, 9J - 9J2BO likes 15 meters around 1300Z. QSL to W6ORD.

QSL BUREAU NOTES

Here is a handy list of Russian QSL bureaus of ex-Soviet republics. Make a copy and keep it with your operating aids.

Bureau	Address
EK	Box 22, Yerevan, 375000 ARMENIA
ER	Box 6637, Kishinev-50, 277050 MOLDAVIA
EU	Box 469, c/o EU1AO, Minsk-50, 220050 BYELORUSSIA
EX	Box 1100, A.R.U.K. Bishkek, 720020 KIRGHIZIA
EY	Box 303, T.A.R.L. Glavpochtamt, Dushnabe 734025 TADJIKISTAN
EZ	Box 555, T.A.R.L. Ashgabat, 744020 TURKMENIA
UK	Box 0, Tashkent, 700000 UZBEKISTAN
UN	Box 112, c/o UN9PC, Kataganda, 470055, KAZAKHSTAN
UR	Box 56, U.A.R.L. Kiev-1, 252000 UKRAINE
4K	Box 165, ROSTK DVPSTO, 4K7DWA, Baku, 370000 AZERBAIDJAN
4L	Box 1, Tbilisi, 380002 GEORGIA
UA	Box 59 U.R.R., c/o RZ3AZO Moscow, 105122 RUSSIA

Since SV9 hams have been experiencing difficulties over the years QSLing via the SV bureau, they have set up their own bureau in Crete. Cards for SV9 stations can go Radio Amateur Association of Crete, P.O. Box 1390, GR-71110 Iraklion, Greece.

INTERNET APPLICATIONS

The VK2SG RTTY DX Notes, as well as other current Digital DX information and bulletins, are available now at several locations on the Internet.

Via Telnet or FTP connect to ab6z.ampr.org and call for the directory </pub/rttynote>.

The digital-dx reflector can be subscribed to by sending an e-mail message to <digital-dx-request@st.rim.or.jp> with the Subject:<subscribe> and Message Body:<Your callsign and your e-mail address.> Example:
Subject: subscribe
Message body: W2JGR, w2jgr@millcomm.com
This list is devoted strictly to serious digital DX items.

The dx reflector can be subscribed to by sending a request to <dx-REQUEST@ve7tcp.ampr.org>
This list runs the gamut of DX related items, digital and otherwise, including some not-so-DX related.

World Wide Web sites:
Jukka, OH2BUA, runs a Webcluster which gathers bulletins, DX spots and WWV information from several widely scattered sources. It is kept fairly current. It can be accessed at URL http://www.clinet.fi/~jukka/webcluster.html>

(cont'd on page 20)

Contesting

Coming Events and Awards

by Rich Lawton, N6GG • 14395 Bevers Way • Pioneer, CA 95666

RTTY Contests - Coming Events

Date:	Contest:
JUL 2	DARC CORONA 10M Digi (German)
JUL 8-9	BARTG Amtor/Pactor (English)
JUL 15-16	DARC HF RTTY (German)
AUG 19-20	SARTG WW RTTY (Sweden)
SEP 3	DARC CORONA 10M Digi (German)

— — REMINDERS: — —

VOLTA RTTY DX (May '95) log entries deadline is July 30, 1995. Mail entry to:

Francesco Di Michele, I2DMI
P.O. Box 55
22063 CANTU
ITALY

— — COMING UP: — —

— DARC CORONA 10M Digital Contest — July 2, 1995

Sponsored by Deutscher Amateur-Radio-Club e.V. (DARC) (Ref: DF5BX)

NOTE: This contest occurs 4 times a year on the first Sunday of March, July, September, and November.

CONTEST PERIOD: Sunday, from 1100Z to 1700Z (6 hours)

MODES: RTTY, AMTOR, PACTOR, and CLOVER

BANDS: 10M ONLY

CLASSES: 1 - Single op 2 - SWL

CONTEST CALL: "CQ CORONA TEST"

EXCHANGE: RST + QSO number, starting with 001.

CONTACTS: Additional QSOs are allowed with same station on different mode.

MULTIPLIERS: Each DXCC/WAE country, and each call district in JA,VE,and W.

QSO POINTS: Count 1 point for each completed QSO.

FINAL SCORE: Total QSOs x total multipliers.

AWARDS: To top stations in each class, country, and district mentioned above.

LOGS: Use separate logsheets for each mode. Logsheets must contain: Date, Mode, Time UTC, Callsign, message sent/received, first-time multiplier prefix, and QSO points. Also required is a Summary sheet with a list of claimed multipliers. Comments are very much appreciated.

DEADLINES: All logs must be postmarked within 4 weeks of the Contest. Mail to:

Werner LUDWIG, DF5BX
P.O. Box 12 70
D—49110 Georgsmarienhutte
GERMANY

WAE country list as of 1 MAR 94, (72 countries):

1A0	C3	ER	GJ	HB0	LA	OJ0	R1/fjl	SV	TF
3A	CT	ES	GM	HV	LX	OK	R1/mv	SV5	TK
4J1	CU	EU	GM/sh	I	LY	OM	RA/eu	SV9	UR
4U/ITU	DL	F	GU	IS	LZ	ON	RA2	SY	YL
4U/VIC	EA	G	GW	IT	OE	OY	S5	T7	YO
9A	EA6	GD	HA	JW/bear	OH	OZ	SM	T9	YU
9H	EI	GI	HB	JW/mayen	OH0	PA	SP	TA1	Z3
								ZA	
								ZB	

COMMENTS: The following major changes were made in February '95:

Multi-op class deleted.
Exchange is now RST + QSO nr. (name and state deleted)
Mode change for additional QSO now allowed immediately after first mode QSO.
USA states do NOT count as mults - only call districts.
VK districts no longer count as mults.

This is a 6-hour all-digital (no Packet) WW 10M contest. It occurs on Sundays, 4 times a year. Count multipliers for each country worked on DXCC/WAE country list, and for each JA, VE, and W call areas. This means that your FIRST JA, VE, and W QSO in the contest will also count for a DXCC/WAE country mult.

— BARTG Amtor/Pactor Contest — July 8-9, 1995

Sponsored by British Amateur Radio Teledata Group
Occurs 2nd full weekend in July. Ref: (BARTG, G4SKA)

CONTEST PERIOD:
Amtor: From 0000Z Saturday to 0000Z Sunday (24 hours)
Pactor: From 0000Z Sunday to 0000Z Monday (24 hours)
No rest periods required.

BANDS: 80, 40, 20, 15, and 10M

CATEGORIES:
1. Single op, Amtor
2. Single op, Pactor
3. Single op, Combined
4. Multi-op, Combined
5. SWL

Single transmitter only

EXCHANGE: RST + QSO nr. + TIME in UTC.
Use FEC for calling, and ARQ for contest message exchange.

MULTIPLIERS: Each DXCC country, including first QSO with W, VE, and VK, counts as a multiplier on each band. Also, each call district in W, VE, and VK will count as an additional multiplier on each band. In addition, each continent (6) counts once, not once per band. Stations entering in combined categories count multipliers only once per band, *regardless of mode.*

QSO POINTS: Count 1 point for each completed QSO. Same station may be worked on other bands. Duplicate QSOs on same band receive zero points and must be clearly marked in the log.

FINAL SCORE: Total QSO points x total multipliers x number of continents (max 6)

LOGS: Use separate logsheets for each band. Logs must show: BAND, DATE and TIME, MODE, CALLSIGN, MESSAGE Sent and Received, new MULTS, and POINTS claimed. Summary sheet must show full scoring, times of operation, and address for correspondence. Include names and callsigns of all multi-op station operators. Any incomplete entries will be classified as check logs. Computer generated logs containing all specified information are welcome.

DEADLINE: All logs must be received by September 10 to qualify. Please send your contest or check logs to:

JOHN BARBER G4SKA
PO BOX 8
TIVERTON, DEVON
EX16 5YU, ENGLAND

AWARDS: Trophies will be awarded to the winning stations in each category, and certificates will be awarded to the top 3 stations in each category and the top 3 single operators for each mode in each continent.

Your comments on the contest would be much appreciated. Please inclue them with your log.

COMMENTS: BARTG has brought in their well-known and well-liked RTTY contest format and fitted into a unique Amtor/Pactor combination mode. It's a bright idea, and a way to spread contesters around in the digital modes. The contest will also provide a clever comparison as to which mode has the advantage in QSO rates, and FEC pileups, and switching from FEC to ARQ in the QRM, all in one weekend. Place your bets: Which mode has the edge? It looks like split frequency operation could be used to advantage, but might be awkward to find frequency areas clear of QRMing other splits. Notice that there are no rest periods. Each mode is 24 hours long: first is Amtor, then Pactor. Any station worked on Amtor may be worked again the following day using Pactor. But combined entries count mults only once per band, *regardless of mode.* This means that if you work a PY station for a mult on 20M Amtor, you can't count a 20M PY as a mult again when you work him later on Pactor. Stay tuned (up).

— DARC HF RTTY Contest, Part 2 — July 15-16, 1995

Sponsored by Deutscher Amateur-Radio-Club e.V. (DARC) (Ref: DF5BX)

CONTEST PERIOD:
Part 1: Third full weekend in February on
Saturday: 20, 15, and 10M: from 1000Z to 1600Z (6 hours)
Sunday: 80 and 40M: from 1400Z to 2000Z (6 hours)
Part 2: Third full weekend in July on
Saturday: 80 and 40M: from 1400Z to 2000Z (6 hours)
Sunday: 20, 15, and 10M: from 1000Z to 1600Z (6 hours)

HAL Breaks The Price Barrier

P38

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A DSP Modem at "Old Style" Modem Prices
Operate Clover & Amtor-Baudot-ASCII-Pactor
All of these modes with DSP performance for only

$395

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Phone (217) 367-7373 FAX (217) 367-1701

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Urbana, IL 61801

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P38

HF Radio DSP Modem

The ***P38*** is a multi-mode HF data modem that gives you top performance operation using RTTY, AMTOR, Pactor, and CLOVER-II waveforms. The ***P38*** is a full-sized plug-in card for PC-AT and faster personal computers. Multi-screen menu-driven HAL software is included with each ***P38*** modem. Many popular "third-party" user programs are also available for the ***P38*** - W0RLI, WINLINK, EXPRESS, RAG-CHEW, and software by WF1B and W9CD, for example. The ***P38*** is complete and ready to run. Plug-in the board, connect three phono cables to your radio, and install the software - that's all there is to it! Whether you want to rag-chew, chase DX, or access electronic mail, the ***P38*** is the modem of choice.

SPECIFICATIONS

DATA MODES:

CLOVER-II

Format	4-tone emission
Bandwidth	500 Hz @ -50 dB
ARQ Mode Modulation	BPSM, QPSM, and 8PSM
FEC Mode Modulation	2DPSM, BPSM, QPSM, and 8PSM
Tones	2250 Hz Center
Symbol Rate	31.25 per second
Error Correction Coding	Reed-Solomon code: 60, 75, or 90% Code Rate
ARQ Protocol	2-level, multiblock auto adaptive modulation
Adaptive Mode Control	Measure S/N & Phase on all data; set TX mode
ARQ Thru-put	8 to 35 bytes/sec.
FEC Thru-put	4 to 25 bytes/sec.

FSK MODES

RTTY Codes	Baudot and ASCII
Baudot Rates	45, 50, 57, 75 Bd
ASCII Rates	75, 110 Bd
RTTY Tones	2125 / 2295 Hz
AMTOR Code	CCIR-476 & CCIR-625
AMTOR Modes	ARQ or FEC
AMTOR Tones	2125 / 2295 Hz
AMTOR Rate	100 Baud
Pactor Modes	Auto-ARQ & FEC
Pactor Tones	2110 / 2310 Hz
Pactor Rates	100 / 200 Baud

HARDWARE:

Circuit Board	Full-size for PC-AT
DSP Processor	TI TMS320C25-50
Control Processor	Motorola 68EC000
Analog I/O	TI TLC320AC01 14-bit Codec
Memory	Boot EPROM; RAM loaded from PC
PC Interface	PC-AT ISO Bus
PC Address	200 to 3FF Hex
PC Requirements	PC-286 Minimum '386 or '486 preferred
Radio Performance	Tune in 10 Hz steps; ± 10 Hz stability
Radio Connections	RX Audio, TX Audio, PTT, FSK, SEL-CAL
Radio Connectors	Phono & Mini-phone

SOFTWARE:

HAL Software	Included with ***P38***
Software Updates	DSP & 68000 code uploaded from PC. Updates available via HAL TECHLINE (217) 367-5547
3rd Party Software	EXPRESS, Rag-Chew WINLINK. W0RLI WF1B, W9CD: Call TECHLINE for list.

WARRANTY: One Year

Specifications subject to change without notice. A copy of the warranty may be obtained free of charge upon request.

HAL COMMUNICATIONS CORP.
1201 W. Kenyon Road
P.O. Box 365
Urbana, Illinois 61801-0365
Phone (217) 367-7373 FAX (217) 367-1701

MODE: RTTY (Baudot) only

BANDS: 80, 40, 20, 15, and 10M

CLASSES: A - Single op B - Multi-op C - SWL

EXCHANGE: USA stations: send RST + QSO nr. + name + State
All others : send RST + QSO nr. + name

MULTIPLIERS: Each DXCC/WAE country, and each USA state, and each call district in JA, VE, and VK, (NOT USA), regardless of band. (NO band multipliers) For USA stations, count only the FIRST QSO with a USA station as a DXCC/WAE country multiplier, regardless of band.

QSO POINTS: Count 1 point for QSO with own country. NOTE: States of USA are not counted as countries
Count 2 points for QSO outside your country but within continent.
Count 3 points for QSO outside your own continent.

FINAL SCORE: Total QSO points x total of multipliers.

AWARDS: To top stations in each class, country and district mentioned above.

LOGS: Logs must contain: Date, Time UTC, Callsign, Message sent/received, name, US-State, first-time-multiplier, and QSO points. Also required is a Summary sheet with a list of claimed multipliers. If entry is multi-op, please list names and callsigns of all ops. Comments are very much appreciated.

DEADLINES: Part 1: May 1st. Part 2: September 1st.
Mail entry to:

Werner LUDWIG, DF5BX
P.O. Box 12 70
D-49110 Georgsmarienhutte
GERMANY

COMMENTS: There are 2 distinct contests here: Part 1 is in February and Part 2 is in July. Each part is identical except for the date, and the bands to operate on. In addition, each part is divided into 2 distinct time segments, each 6 hours long. The "**Saturday segment**" of Part 1 is for operation on 20, 15, and 10M, and runs from 1000Z to 1600Z. The "**Sunday segment**" of Part 1 is for operation on 80 and 40M, and runs from 1400Z to 2000Z. Part 2, in July, reverses the band operation for Saturday/Sunday segments. Got that? GOOD!

NOTE: There are no multipliers for USA call areas. Just the STATES count for mults. Also, NO band multipliers. This means that only your FIRST USA QSO in the contest will count for a DXCC/WAE country mult, along with the State mult.

— SARTG WW RTTY Contest —
August 19-20, 1995

Sponsored by the Scandinavian Amateur Radio Teleprinter Group. (SARTG)
Third full weekend in August. (Ref: SARTG, SM4CMG)

CONTEST PERIODS: Three separate periods:
0000-0800 UTC Saturday, 1600-2400 UTC Saturday, and
0800-1600 UTC Sunday.

BANDS: 80, 40, 20, 15, and 10M. (five bands)

CLASSES: A) Single op, All Band C) Multi-op, Single Tx, all band
B) Single op, Single Band D) SWL, all band
NOTE: Single op, All Band stations may also enter as a single band entry of their choice, too.

MODES: RTTY only.

EXCHANGE: RST + QSO number, starting with 001.

MULTIPLIERS: Each DXCC country on each band, including first contact with Australia, Canada, Japan and USA. Additionally, each call area in VK, VE, JA and W will count as one multiplier on each band.

QSO Points: QSO with own country, 5 points. QSO with other countries in own continent, 10 points. QSO with other continents, 15 points. In VK, VE, JA, and W, each call area will count as a separate country.

SCORING: Sum of QSO points x sum of multipliers = TOTAL SCORE.

AWARDS: To the top stations in each class, country, and district, if the number of QSOs is reasonable.

LOGS: Use separate logsheets for each band. Logs must show: BAND, DATE/TIME (UTC), CALLSIGN, EXCHANGE MESSAGE SENT and RECEIVED, MULTIPLIERS, and QSO POINTS. Summary sheet must show scoring, class, your callsign, and name and address. Multi-op stations must show the callsigns and names of all operators involved. Your comments will be very much appreciated.

DEADLINE: Logs must be received by May 30 to qualify. Mail logs to:

SARTG Contest Manager
Bo Ohlsson, SM4CMG
Skulsta 1258
S-710 41 Fellingsbro
SWEDEN

Comments: This popular contest has 3 separate operating periods, each 8 hours long, and separated by two 8 hour rest periods. The concept is quite unique and there can be no excuse of fatigue from the more senior ops. Band multipliers mean that activity will be spread over all the bands. August means summer conditions are still in effect in the Northern Hemispheres so the low bands will have plenty of static and the high bands will have mediocre propagation. But not to worry. Activity is usually high from all over the globe. Another unique item for this contest is that single ops can also enter as a single band entry, with the band of their own choosing.

The exchange (RST + QSO serial number) means that you can keep track of your competition by comparing your number with his. If he suddenly appears with 10 more QSOs than you, it means you were a) goofing off, b) playing around on the wrong band, or c) stuck in a pileup and wouldn't give up.

Note that the first QSO with VK, VE, JA and W counts as a multiplier on each band. Also, each call district in VK, VE, JA and W will count as a multiplier. Separate logsheets are required for each band.

-+- Summertime Reflections -+-

During summer we all put on different hats. Yardwork, antenna repair, upgrading obsolete gear, vacations, etc.. Summer '95 is vastly different. Severe storms have created a stall on the to-do list. Wild weather has put a delay in how and when to tackle the things we've been anxious to tackle all spring.

Underlying many proposed projects is the declining sunspot cycle. Most summers we could count on 20M to give us worldwide propagation for weekends of contesting, at least during the daylight hours. 15M is always marginal, and 10M is spotty, at best. But this year's predictions are really dismal, and so will be 1996.

Summertime usually has reasonable propagation on the low bands, at night of course. But there's the static crashes from those thunderclouds that seem to be really big and ongoing this year. Static has always been with us. Most of it comes from lightning, with the big noises from lightning that strikes the earth. Those strikes that hit the earth emit extremely powerful, vertically polarized waves. During the nighttime hours, various layers of the ionosphere reflect these crashes and propagate them for thousands of miles.

On 40M, which becomes the bread-and-butter band at night, those with vertically polarized antennas can become completely wiped out by static crashes. Even though the vertical usually has the best vertical take-off angle for transmitting, it is the worst for receiving because it lines itself up with the vertically polarized lightning crashes.

Here's one partial solution: Use a horizontal antenna for receiving, while retaining the vertical for transmitting. I use a Kenwood TS-930S transceiver. It has a separate antenna input for transverter use. I built a "Receiving Antenna Select" box that allows me to select 3 different horizontal receiving antennas, in addition to the transmitting one.

Receiving antennas do not have to be high. My 160M dipole is 10 feet off the ground, and works great. I use it often on 80M, too. The secret to receiving antennas is to place them away from any potential man-made noise (TV sets, power lines, etc.). Receiving antennas should be "DC shorted" to prevent rain static accumulation. Folded dipoles and quad loops work well and are less frequency critical.

On the low bands I've found that using the "RF Attenuation" switch really helps in cutting static. The reason is that it forces the receiver RF stage to look at 50 ohms right at the input of the rig. Since the RF stage is designed for 50 ohms to match the coax, and the coax goes underground out to the antenna, the random static pickup from the feedline tends to be minimized. Inserting 10 dB of attenuation is easily made up by increasing the RF gain, so you end up with a much better signal-to-noise ratio.

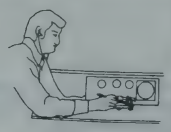
And speaking of signal-to-noise ratio, there's a technology out there that should really help in pulling in the weak ones. Namely, "Digital Signal Processing" or DSP. I haven't tried it yet, but that's one idea that I would like to persue - after I get all this stupid yard work done!

((73)) See you in the pileups, Rich, N6GG

Coherent CW

Another Digital Mode!

by Peter Lumb, G3IRM
2 Briarwood Ave • Bury St. Edmunds, Suffolk • UK IP33 3QF



Addendum

(Note: Peter's letter arrived after the July article. Because some of these comments relate to the current column we are simply adding them to his column—Ed.)

"I surely agree with Cliff W6HDO regarding the comments from W7GB. CCW is much nearer CW than it is to the digital modes and should stay in the CW segments of the bands. Cliff also states that his CCW Lowfer Beacon on 166.667 Khz is operational again. He has also been passing copies of PCW around.

Since writing the July column PA0CD and I have started tests every Thursday evening at 1700Z on 7020. Paul was able to copy me last week but so far I have heard nothing! There seems to be some noise on the frequency most of the time and this makes it difficult. I think I will have to suggest a move to 7035.

Ray Petit now advocates a frequency very near the bottom end of the 10 Mhz band. This appears to be a good suggestion but we cannot apply the same rule to other bands as many rare stations operate in the bottom few kilohertz. We would be very unpopular there as on 25 Khz up. Somehow or other I think a frequency slightly away from the crowd—35 Khz up is as good as any.

There must be quite a few PCW and COHERENT programs around now, but I don't hear from the owners. What are they doing with the software? As I have said before, what we want is a few operators who can appear at regular times on specific frequencies so everyone knows where and when to look for them. My own efforts with PA0CD is a start and we would appreciate any reports of reception. If anyone would like to try 20 meters I would be pleased to join in. Any USA operator who is prepared to have a try, even one fixed time and frequency every week would be most welcome."

73 Peter, G3IRM

First let me thank all those who have written as a result of my letter informing them that I would no longer be issuing the CCW Newsletter replacing it with this column in The Digital Journal. Most expressed their sorrow at hearing the news but I think all appreciated the fact that a column in the Journal would be more likely to attract new recruits to the mode. The letters were much appreciated.

As from the 3rd May Ernst Schroeder's coherent program called PCW has been available as shareware and I have sent a copy to Jim Mortensen for inclusion on the ADRS BBS. Copies have also been sent to the U.K. shareware distributors. If you want a copy and have difficulty in getting one let me know. The program is very user friendly and well worth a try if you have Bill de Carle's interface board.

I know of a group of three amateurs in Holland who should be ready to operate and Stan Wilson AKOB has been trying to promote interest on packet and about 15 members of his local QRP Club have VE2IQ boards. They now also have a copy of PCW. As far as I know I am the only station active in the U.K. Chiharu JA3DLE/I seems to be interested in adapting CCW to RTTY using on-off tones in place of the usual two tones. I also get several enquiries every month for information. So things do appear to be improving.

Which brings me to the question of operating times and frequencies. We are not going to get very far if everyone calls CQ at random times. The chances of a contact are remote. Various suggestions have been made in recent issues of the Journal. As a compromise I now suggest 35 Khz up from the bottom of each band avoiding the DX and QRP frequencies. Can I now ask all who can operate to let me have definite times when they are likely to be on the air and the frequencies which will be used. If there is a reasonable response I will send a summary to all who write to give advance information before the next CCW column is due.

There are now two ways you can operate CCW - by using hardware or software. The original hardware system used a lot of integrated circuits and required very stable oscillators - in other words it took a lot of work to build and set up but it was the only way in 1975 when it was introduced to the amateur radio world. This is almost certainly the reason CCW did not become widely used. Now we have computer programs which simulate the hardware and which can be amended to introduce new features which would be difficult if not impossible using electronic components.

As a result we can now use transceivers which are not as stable as were needed for use with the Petit filter as automatic frequency drift compensation can be included in the program. Automatic searching for the correct phase and automatic tracking have been added. The result of all this is, of course, that commercially available equipment can be used. Very many amateurs now have computers and the only interface needed is the small sigma-delta board described by Bill de Carle in QST and the ARRL Handbook. You can either build the board yourself (much easier than the hardware filter) or buy one ready made. That is all there is to it. As an aside it should be possible to program some of the sound boards which many computer owners already possess to operate as CCW interfaces. Are there are sound card programmers who would like to have a try?

There is a saying that you can't teach an old dog new tricks. I am getting to be an old dog but am still trying to learn new tricks. For years I was an avid builder of electronic circuits but this is getting a little difficult these days and I tend to move to other ways whenever this is possible. The latest craze in the amateur world is digital signal processing. Has anyone tried to sort out some of the manuals which come with these devices?

I have but with only a modicum of success. They are no doubt written by experts in their own field but they are certainly not written for beginners. It took me a long time to work out how to get entries into memory using the Texas Starter Kit and I am now trying to get signals in and out of the board. Judging by the articles which appear in QEX and other magazines now and again there are some amateurs who have learnt how to use the kit. Many years ago The Blacksburg Group wrote a series of excellent books for beginners who were learning how to use the 8080 and 8085 devices.

Can't someone write similar books or articles for magazines for dsp devices? This Texas starter kit should be another way in which a computer could be used for CCW so it should be worth investigating. We already have two computer programs for CCW; other programs using other devices would all help to make it easier and possibly cheaper for readers to operate CCW with the potential advantages this method has over normal CW.

One small problem has arisen when using CCW with my Kenwood TS450 and the same problem is likely to arise with other makes of transceivers. The delay control does not provide a long enough delay when using speeds of 12 w.p.m. or less to prevent the keying relay dropping out between words. The obvious way to prevent this is to lengthen the time constant on the delay circuit but I don't like poking around in these modern miniature machines. The solution I have used is

quite simple and does not involve any modifications to the transceiver. A 555 timer is included in the sigma-delta box wired so that it starts to time out when a mark is sent and re-triggers on following marks. When sending stops it is allowed to time out giving sufficient delay to hold the relay between words even at the slow speed of 8 w.p.m. The delay is, of course, adjustable. The output of the timer is connected to the push-to-talk line on the microphone connector via an igfet as an inverting interface. Ask for a circuit if you need one.

Have you heard of a digital mode called CYCOM? I came across it in the Spring issue of BARTG's DATACOM. Here is the first paragraph. CYCOM stands for "Communicate Your Characters Over Minutes". The most noticeable feature of this mode of transmission is its slowness; 10 seconds per bit or O. 1 baud to be precise. The saving grace of this mode is that it gives a full 30dB better signal to noise ratio compared with other digital modes. This means that your 400 watt transmitter using CYCOM mode will have equivalent range to a 0.4 megawatt transmitter using a conventional mode. You should be able to make reliable long distance contacts using the tropospheric scatter mode of propagation. Doesn't this sound very much like the early articles published about CCW? What is more it uses the same sample and dump filter as the hardware Petit filter. And they used to say that CCW was too slow!

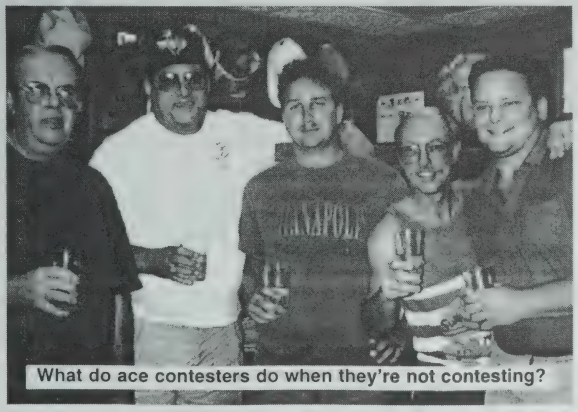
Here is a list of published articles relating to coherent c.w. which may help if you are looking for more information.

1. Short description of coherent c.w. in various editions of the ARRL Handbook.
2. Coherent c.w. - The c.w. of the future by K8EEGIO - CQ Magazine June/July 1977. 3. Coherent c.w. - The concept by W6NEY - QST May 1981.
4. Coherent c.w. - The practical aspects by W6NEY - QST June 1981.
5. A receiver spectral display using d.s.p. by VE21Q - QEX January 1993. This article has been reprinted in recent issues of the ARRL Handbook and describes the interface to be used with computer programs.
6. A DSP version of coherent c.w. (CCW) by VE21Q - QEX February 1994.
7. Coherent c.w. Newsletter by W6NEY - 1975/1976.
8. Coherent c.w. Newsletter by G31RM- 1989/1994.

The following are in German .....

9. Die grundlagen des coherent c.w. by Alexander von Obert - Funkschau June 1982. 10. Koharente telegraphie (CCW) - ein neuer start mit besseren mitteln? by DLIBT Amateurfunktechnik November 1994.
11. Die CCW - alternative von VE2IQ by DLIBT - Amateurfunktechnik December 1994.

I have a list of many more articles I have collected over the years but these relate mainly to the Petit system. Ask if you would like a copy of the list. I can supply photocopies of articles at ten pence (or fifteen cents) a page. ❑



What do ace contesters do when they're not contesting?

Digital DXing

A Beginners Guide

by Glenn Vinson, W6OTC

#2 Embarcadero Center, #1660 • San Francisco, CA 94111

Once confined to a small group of enthusiasts, digital DXing, particularly on RTTY, has become very much a mainstream part of the DXing community. The demise of mechanical teleprinters and the spread of personal computers and simple, affordable, multimode TNCs all coincided with the rise of the extraordinary propagation conditions of sunspot Cycle 22, stimulating unprecedented interest in RTTY DXing around the world. Today, most major DXpeditions regularly activate RTTY from exotic locations, and when they are especially remote, such as at Peter I Island (3Y0PI), the operators use the -TOR modes to provide reliable health and welfare traffic to and from their homes. Almost 100 digital operators have now received the CQ Magazine Worked All Zones ("WAZ") award and at least 5 have achieved DXCC Honor Roll status, a feat almost unimaginable just a few years ago.

I have no verifiable data, but my impression from several years of DXpeditioning and contesting from three continents is that there are presently about 1,000 fairly serious digital DXers in the world, and perhaps twice that number of casual digital Dxers. Some of their interesting activity is reported here each month in the column written by Jules, W2JGR. Additional reports of digital DX activity appear weekly in the DX Bulletin, QRZ DX and in listings of DX stations heard on digital modes as compiled by VK2SG and reported on local Packetclusters and on the Internet DX Reflector. If you have not yet joined in the fun of chasing DX this is the time to do so.

Which Digital Mode to Use

Most digital DX activity occurs on RTTY because the exchanges are much faster than on the -TOR modes. Since so many other stations want to work the rare ones, the exchanges with particularly rare DX are made contest-style, limited to a signal report (often given as 599 regardless of actual conditions) confirmation of your callsign, and occasionally your QTH (state) and name. The DX station generally indicates how much information he wants from you by the particular information, if any, that he sends about himself. A notable development, however, in digital Dxing has been the slow but growing discovery by DX stations of the benefits of the -TOR modes, particularly PACTOR. While the exchanges are slower, the error-correcting and weak signal communications abilities of PACTOR modes appeals to some of the more digitally sophisticated DX stations.

Where to Listen for Digital DX

As propagation continues to deteriorate in the late stages of Cycle 22, most—but certainly not all— RTTY DX activity occurs on 20 meters. Recent notable exceptions have included VP8SGP (South Georgia) which worked RTTY on 30 and 40 meters and 3D2CU (Conway Reef) which found 15 meters open and made almost all of its RTTY contacts there. On 20 meters, most RTTY DX activity outside of major contests is found between 14.082 mhz and 14.086 mhz. However, DX can appear anywhere from 14.080 mhz to 14.089 mhz or even higher. TOR activity below 14.080 mhz and Packet activity above 14.089 generally discourages RTTY DX activity there, although in major contests, RTTY DX can be found between 14.065 mhz and 14.110 mhz. Also, as noted above, some DX activity fairly often appears on the -TOR modes, making regular monitoring of the -TOR activity between 14.065 mhz and 14.080 mhz worthwhile.

The situation on 40 meters is more complex because custom, IARU recommendations and some government regulations in ITU Region 1 (Europe, Africa and North Asia) differ from those in Region 2 (The Americas). In Region 2, DX appears in the 7080-7090 khz range, while in Region 1, RTTY is usually found in the 7025-7040 khz

range. Nevertheless, in major contests, many Region 1 stations will be heard in the 7080-7090 range. The somewhat chaotic RTTY situation on 40 meters is described in more detail by Rich, N6GG, on page 21 of the April 1995 issue of the Digital Journal.

Little RTTY DX activity occurs on 80 meters outside of contests. During those periods, listen from 3580 to around 3650 khz.

On 10 mhz, VP8SGP operated around 10.120. Unfortunately, JA stations are not allowed to operate RTTY below 10.140, and some frequency closer to them may become the standard if RTTY activity increases on 30 meters.

On 17 meters, some RTTY activity may occasionally be found around 18.1 mhz, but again, only a few DXpeditions (like YK0A) have used 18 meters.

When to Listen

The greatest annual concentration of RTTY DX activity occurs during the ADRS-CQ Magazine World Wide Digital DX Contest, held on the last full weekend of September, just at the time of the Fall Equinox. This contest generates tremendous enthusiasm as operators world wide vie to work others outside of their own country, as well as to work all U. S. states and VE provinces. Several DXpeditions are usually scheduled to occur at this time, making it a particularly useful period to find new countries. In addition, since the contest exchange includes each station's CQ Zone number, one can readily search for (but not necessarily find!) any zones still needed for RTTY WAZ.

Other useful contests for DXers are the IDRA WPX Contest, ANARTS, JARTS, BARTG and the ARRL RTTY Roundup.

Another resource well known to readers of the Digital Journal is the hourly propagation report broadcast by WWV at 18 minutes after the hour and updated at three-hour intervals beginning at 0000z. This information, when used in conjunction with propagation-forecasting software such as MiniProp, can provide useful predictions for likely openings to desired areas of the world. Such predictions can be important throughout the year, particularly when you know from reading Jules' column or one of the DX magazines that a rare country is expected to be activated on certain dates and you want to know when and where propagation will favor your area.

Operating Techniques

Although most DX stations listen on their own frequency, rarer DX almost always operate "split", meaning that they are listening on a different frequency (usually up 1-5 kc) than their transmit frequency. They do this of necessity, in order to pick out the calling stations faster as well as to enable those being called by the DX station to hear the DX itself. Accordingly, the first and primary rule of DXing is to LISTEN, and from that listening, to determine who the DX is, where he/she is listening, whether there is a pattern to the operation (e.g., does the DX station seem to listen farther and farther up the band after each contact? does he take "tail-enders"?) and what information is being exchanged. Ideally, the DX station will clearly state where he is listening (e.g. "up 2-4"), but in any event you should LISTEN first to verify where the DX is listening. If the DX shows no clear pattern in choosing stations in his listening band, try to find a clear frequency within that band and stay there for calling the DX station, listening occasionally to your own transmit frequency to make sure it is still (relatively) clear.

If you inadvertently transmit on the DX station's frequency when he is working split, you may be greeted by some policeman sending "up" or "qsy" or be called a rude name. Do not be overly embarrassed. All of us have made this mistake at least once in our enthusiasm to snag a "rare" one. Do, however, LISTEN to determine where the DX station is listening, recheck your rig to make sure you have pushed the right buttons for split operation, and move your transmit frequency to the right area.

Unless the band is very crowded with other activity, **do not**, when calling the DX station, send the callsign of the DX station. **Do not** send "RY" or any other superfluous characters. Send **only your** call a few times, depending on conditions and the number of others calling. Indeed, when signals are strong and the DX operator is an experienced RTTYer, good DXers often send their callsign only once or twice before listening for the DX station's reply. Pre-programming one or two macros in your RTTY software (for example: <xmit on> <your callsign> <your callsign> <xmit off>) is particularly useful for this sort of calling. One caveat: in contests, many stations use the WF1B "RTTY" software. This extremely useful software automatically picks out and highlights a call on the screen when it is preceded by "DE", inserts it in calling buffers and then logs the call when the contact is complete. Accordingly, in contests, many stations program their calling macro to include the "de" and some end the call with a "k" to signal they have finished calling: <xmit on> DE <your callsign> <your callsign> k <xmit off>."

When the DX station answers you, send, as briefly as possible, the data he has indicated he is interested in receiving. For example, "QSL 599 CA TNX 73 DE <your callsign> sk". If the DX station does not have your callsign correct, precede the foregoing with, "DE <your callsign>". Each of these messages can be pre-programmed as macros and used alone or in combination as circumstances require. Because many others are usually waiting to work the DX station, good manners dictate that respond promptly when called and that you not send unsolicited information such as your brag sheet, the weather, your dog's name, etc. The fact that a rare DX station is operating contest style rather than ragchewing does not necessarily mean that he is uninterested in your dog's name, only that he is very busy trying to work all of the "deserving" who are calling him.

When the contact has been successful, expect the DX station to acknowledge the exchange, send QRZ and to move on to the next caller. There is no need for you to make any further transmission.

Learning to chase rare DX provides a great opportunity to perfect your operating techniques and to maximize the performance of your station. At a more relaxed level with less rare DX, making the contact, whether on RTTY or PACTOR, provides a great bridge to other countries and cultures, and has been an integral part of amateur radio since at least the time of Marconi. Unlike the past, however, now is the time that **digital** DXing has come into its own.

(DX News - cont'd from page 15)

The Web site of The International Digital Radio Association (publisher of the Digital Journal) can be accessed at URL <http://www.iea.com/~adrs> The IDRA FTP site is <ftp.iea.com/public/adrs>.

To see what DX is being reported in southern Europe, connect to the IK5PWJ-6 Packetcluster by crossing the bridge between Internet TCP/IP and Packet AX.25 as follows: Via Telnet type <open 44.134.208.213>. Almost instantly you will connect to the Gateway station ik5qgo.ampr.org in Pisa. At the prompt type <DXCPWJ> and you will be welcomed to the IK5PWJ-6 packetcluster. Most of the common packetcluster commands you are used to, will be recognized. If in doubt type <H>.

HAVE DX NEWS?

Send it to me via:
Pactor at W5KSI.#NOLA.LA.USA.NOAM mbx (1)
Packet: W2JGR @ WB0GDB.#MSP.MN.USA.NA
My Pactor personal MBX on 14070 khz.
Internet: w2jgr@millcomm.com
FAX: 612 377 3600 (mark for my attention)
USPS to my CBA.

THANKS - Thanks to the following for all your information: I5FLN, IK5PWJ, IK5QGO, JF1MGI, JE2ERH, JE2UFF, JH2PDS/1, K2ENT, RA6YR, SV9AQG, UA4CIF, VE7TCP, WB2CJL, W5IJU, W5KSI, W5ZPA, WW0E, ZS5S and DXNL..

See you all next month. For now, bye bye from Minnesota, PAX....73 de Jules W2JGR

1. W5KSI scans 7069, 7071, 7075.5, 7076, 14068, 14070, 14073.5, 14074, 14079, 21074, 21075, and 21079 khz.

Thirty Years of Contesting

on RTTY

by Bob Nolan, WA6WGL
714 Evanwood Avenue, West Covina, CA 91790

QSL - circa 1965

(The following is an excerpt from a letter from Bob to John Barber G4SKA, the BARTG contest guru of long standing. It speaks of a different time and place, yet the logs and the QSL cards make it seem as though everything could have taken place yesterday. His final, handwritten comment, "Wish I had my manual typewriter. This electronic typewriter is the pits!!!" But Bob, I have met 85 year-old operators on the bands who have switched to a 486/66 computer, PK's or PCI's or Kam's, newfangled software, the works . . . and then blast away in contests or call CQ. Give up the green keys and join in. Hi! de Jim).

Enclosed is a copy of my original log for the 1965 BARTG Contest. As busy as you must be, I know you really don't need something like this, but I thought it might interest someone in BARTG. Besides, I thought I might take some liberties after 30 entries out of the 31!

Some history: I started in RTTY in mid-'64 with a Johnson Challenger, an SX101A, a MarkIII TU (a '61 design of WNRM), and a Model 26 Teletype. My first RTTY QSO was with my 'Elmer' K6DDQ on 13 December 1065. I'm pushing 70 years of age.

	DATE TIME	STATION CALLED	CALLED BY	HIS FREQ. OR DIAL	HIS SIGNALS RST	MY SIGNALS RST	FREQ. MC.	EMISSION TYPE	POWER INPUT WATTS	TIME OF ENDING QSO	
		1965		-MC-	RTTY	Contest					
	21 March							TR	250		
53	0356	K8YJQ		7	569					2	2
54	1413	W1BGW		14	589					2	
55	1423	WB2FYB		14	599					2	
56	1432	W2MZV		14	599					2	
57	1439	WØMPE		14	599					2	1
58	1712	W3ZVJ		21	599					2	
59	1758	W8DBW		21	579					2	
60	1822	ZS6UR		21	469					+	
61	1828	WA8FYE		21	599					2	
62	?	I1RIF		21						—	
62	1937	W6WL1		14	599					2	
63	2002	W3MHD		14	589QRM					2	
64	2054	W7RSJ	X	14	599+					2	
65	2109	K5OLU		14	599					2	
66	2123	KP4AXM		14	599					10	

Remember how we used to keep logs in the years BC - Before Computers (cont'd on page 24)

DIGITAL DIGEST

News, Views, Bits & Bytes

Edited by Tom Arvo, WA8DXD
CompuServe ID: 73330,1335 • Internet: arvo@magicnet.net

Is THIS radio?

Date: Tue, 11 May 1995
From: Arthur Chandler <arthurc@mercurv.sfsu.edu
Subject: Virtual Amateur Radio on the Internet

BayMOO, an all-text virtual reality on the Internet has implemented a striking new technology for amateur radio operators (Hams). BayMOO has just opened its Virtual Ham Central, a virtual room which is linked to a server in Canada, which in turn is connected to hundreds of packet radio stations all over the world. Anyone can enter the room and follow several conversations at once—usually in different languages. Only licensed Ham operators can transmit from the room.

A licensed ham tells his or her callsign to Dr. J or Akira—the owners and builders of the room—who then register the visitor's callsign in the room. After the server link is activated, whatever the operator types after the % sign is sent out over the link to all connected packet stations. A typical conversation might look like this:

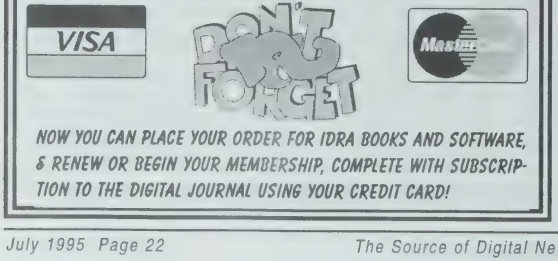
<KO60A> Hello—anyone here tonight?
<PY2NG> Boa Noite—alquem aqui fala Portugues?
<KE51IE> Good evening, KO60A, we are recovering from the big storm in Texas.
<VE4DT>—Jean QTH Quebec, ici.
<PU61> Ola PY2NG, como esta 0 tempo em Rio?
<KO60A> Heard about that, KE51IE. Any hams involved in emergency communications?
<PY2NG> Bonsoir, Jean, De Joao QTH Rio.

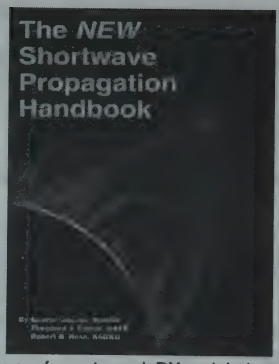
The Virtual Ham Center gives amateur radio operators a chance to communicate with each other via text in a much faster and more error-free medium than ever before.

To reach the Virtual Center at BayMOO: telnet baymoo.sfsu.edu 8888 Login in as guest
Then type @go Virtual Ham Center

For more information contact jeremy@crl.com

Commentary:
(Please note the "8888" in the Baymoo Internet address. I have not seen this address element before so if you have trouble, drop it). Like so many Internet developments this story excites both interest and a bit of concern. Obviously it will be a fun place to play like you were on the radio and actually linked with that person in BY or PY or OH, or wherever. And, perhaps, you might actually be utilizing a radio link somewhere in the process. But how can you tell? How can you tell that the callsigns are genuine? There is no validation. Then there is the question of QSL cards. It would be easy to work DXCC on an active weekend. Hi! It seems to me it is no more than a chat mode on a wire network, one that incidentally is called a new technology for amateur radio operators. Sorry, I don't believe it. But you may have other opinions. Let's discuss it—Ed





Tuning across the HF ham bands these days can often cause one to wonder if the receiver went south or the antenna blew down. Well, it might be a good idea to take a second look at your rig for any obvious signs of problems such as being sure the coax is indeed connected to the rig. But chances are more than likely that the culprit is sunspots or the lack thereof. Yes, we are at the low ebb of the cycle which means long haul communications on the HF bands requires more skill and knowledge.

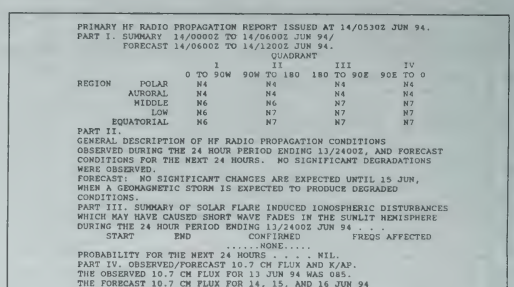
One means to stack the cards in your favor, to work DX and derive more enjoyment from the time you spend at your rig is to learn more about ionospheric propagation.

Enter **The *New* Shortwave Propagation Handbook.** This book is the cumulative effort of George Jacobs, W3ASK, Theodore J. Cohen, N4XX and Robert B. Rose, K6GKU. The authors are each profiled in the book and are well suited to the task of providing an informative, comprehensive tutorial and reference manual on the subject matter. The *New* Shortwave Propagation Handbook begins by presenting the principles of ionospheric propagation, discusses sunspots and the current state of the cycle; and moves on to predictions and forecasts. Many do-it-yourself methods are explained with charts and graphs. Various computer programs for propagation prediction are also detailed.

Armed with this book, you'll become better prepared to make the best of your operating time... making QSOs and working DX by knowing when band openings are likely to occur. To steal a phrase from the back cover, "The *New* Shortwave Propagation Handbook will become your ever-present companion at the operating table as you master the art of shortwave radio propagation."

Published by: CQ Communications, Inc.
76 North Broadway, Hicksville, NY 11801 USA

Sample Page



IONOSPHERIC FORECASTS 5-15

```
PRIMARY HF RADIO PROPAGATION REPORT ISSUED AT 14/0530Z JUN 94.
PART I. SUMMARY  14/0000Z TO 14/0600Z JUN 94/
         FORECAST 14/0600Z TO 14/1200Z JUN 94.
                                QUADRANT
                          I          II         III         IV
                     0 TO 90W   90W TO 180   180 TO 90E   90E TO 0
REGION      POLAR       N4          N4          N4          N4
          AURORAL       N4          N4          N4          N4
           MIDDLE       N6          N6          N7          N7
              LOW       N6          N7          N7          N7
      EQUATORIAL        N6          N7          N7          N7
PART II.
GENERAL DESCRIPTION OF HF RADIO PROPAGATION CONDITIONS
OBSERVED DURING THE 24 HOUR PERIOD ENDING 13/2400Z, AND FORECAST
CONDITIONS FOR THE NEXT 24 HOURS.  NO SIGNIFICANT DEGRADATIONS
WERE OBSERVED.
FORECAST:  NO SIGNIFICANT CHANGES ARE EXPECTED UNTIL 15 JUN,
WHEN A GEOMAGNETIC STORM IS EXPECTED TO PRODUCE DEGRADED
CONDITIONS.
PART III. SUMMARY OF SOLAR FLARE INDUCED IONOSPHERIC DISTURBANCES
WHICH MAY HAVE CAUSED SHORT WAVE FADES IN THE SUNLIT HEMISPHERE
DURING THE 24 HOUR PERIOD ENDING 13/2400Z JUN 94 . . .
     START        END          CONFIRMED          FREQS AFFECTED
                              .....NONE.....
PROBABILITY FOR THE NEXT 24 HOURS . . . . NIL.
PART IV. OBSERVED/FORECAST 10.7 CM FLUX AND K/AP.
THE OBSERVED 10.7 CM FLUX FOR 13 JUN 94 WAS 085.
THE FORECAST 10.7 CM FLUX FOR 14, 15, AND 16 JUN 94
ARE 085, 085, AND 084.
THE OBSERVED K/AP VALUE FOR 13 JUN 94 WAS 03/11.
THE FORECAST K/AP VALUES FOR 14, 15, AND 16 JUN 94
ARE 03/15, 04/30, AND 05/40.
SATELLITE X-RAY BACKGROUND: A9.9 (9.8 E MINUS 05 ERGS/CM SQ/SEC).
THE EFFECTIVE SUNSPOT NUMBER FOR 13 JUN 94 WAS 040.1.
99999
```

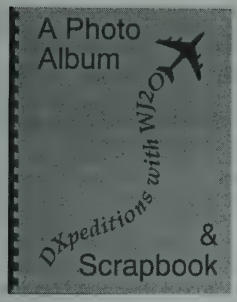
Figure 5.17. SESC PBBS HF Radio Propagation Report.

Weekly Summary Text containing highlights of solar and geophysical activity during the past week and a forecast for the next 27 days. Available each Wednesday after 0100 UTC

The times indicate when each message is updated. While this amount of information may seem overwhelming to the first-time user, the product formats are very straight forward. One of the more useful is the **Propagation Report**, which takes about a minute to dial into, log-on, print, and exit. The only cost is the price of the telephone call

PBBS Propagation Report. The High Frequency Radio Propagation Report is prepared by the U.S. Air Force Space Forecast (AFSFC), and it is issued jointly with SESC. The Primary daily forecast is issued at 0600 UTC with secondary forecasts released at 0000, 1200, and 1800 UTC. Figure 5.17 shows an example of this report. Each propagation report has four parts. Part I presents an estimate of expected propagation conditions for the Northern Hemisphere. An alpha-numeric designator representing expected propagation conditions is assigned to 20 low-, middle-, auroral-, and polar-latitude segments. Part II contains a plain-language discussion of geomagnetic and ionospheric conditions and their effects on propagation. Part III contains a summary of solar disturbances that have occurred and the probability of future occurrence. Part IV is a three-day forecast of *K*- and *A*-indices and 10.7 cm solar flux. If there is something that the reader does not understand, there is an excellent descriptive text of the Propagation Report in the "help" section. Overall, this report provides everything required to do propagation forecasting in the way described earlier in this chapter. For the price of a telephone call, SESC has provided an easy and comprehensive source of solar-geophysical data that is more than adequate for use in preparing your own specific HF circuit forecasts

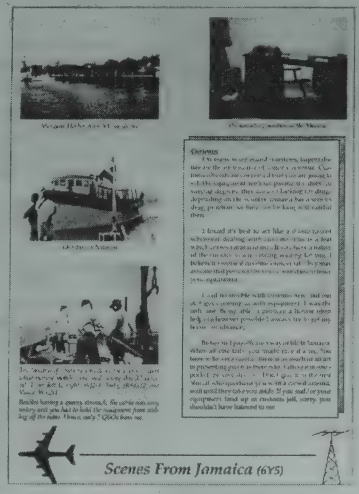
INTERNET Data
For readers who have access to the INTERNET E-Mail computer network, a comprehensive worldwide

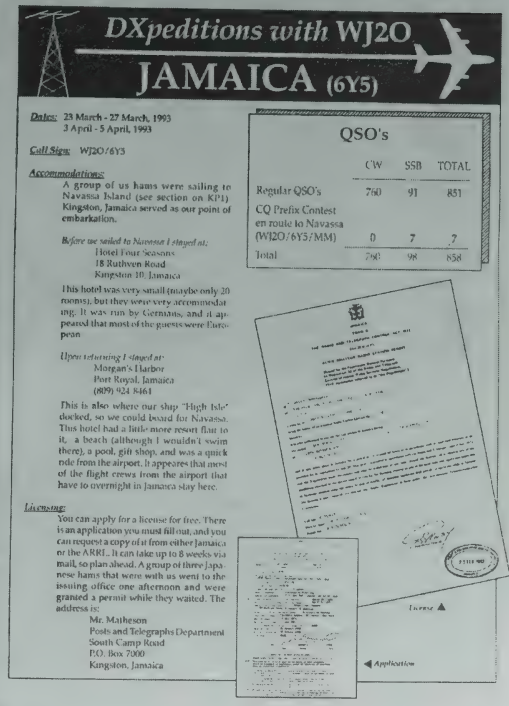


Here's a means to do a little DXpeditioning from the comfort of your easy chair. Join Dave Farnsworth, WJ2O on a pictorial excursion of DXpeditions he has made over the past few years. **Dxpeditions with WJ2O** is a spiral bound book which Dave calls a Photo Album & Scrap Book. By the way, if Dave's callsign is familiar, you may also know him through his software. Dave is the author of the popular WJ2O Logging Program.

Dave Farnsworth, WJ2O
2945 Main Street, McConnellsville, NY 13401 USA

Bound within approximately 40 pages of combined black & white photos and text are Dave's DXpeditions to C6A, KP1, KP2, KP4, OX PJ2 VE VP2E, V@ and 6Y5. Each DXpedition follows a format with photos and captions, a map of the location and a description of the QSOs made and equipment used. Dave also discusses accommodations and licensing procedures in case his "photo album" whets your appetite to form your own DXpedition. A excerpt from Dave's album describing his DXpedition to 6Y5 is shown with this review.

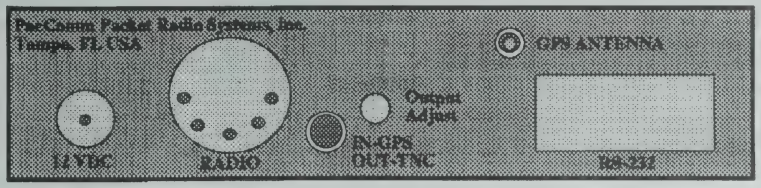




For more information on Dave's book (or his software) direct your correspondence and inquiries to:

The PacComm TINY-2 MK-2 TNC with Internal GPS

Want to experiment with Automatic Position Reporting System (APRS) tracking of your boat or vehicle? The TINY-2 MK-2/GPS integrates a Trimble SVeeSix OEM GPS module inside the TINY-2 case for convenient and troublefree operation.



TINY-2 MK-2/GPS, Rear View
Note GPS Antenna Connector and Selector Switch

Switch from using your TINY-2 as a regular TNC to a remote vehicle tracker by simply pressing a button. The Terminal/GPS switch is on the TNC rear panel. Set the switch one way and you can program the TINY-2 with commands or do other packet activity, set the switch the other way and the GPS is connected and automatically updating the TINY-2 buffers.

PacComm Packet Radio Systems, Inc.
4413 N. Hesperides Street
Tampa, FL 33614-7618 USA
Voice: +(813) 874-2980
Facsimile: +(813) 872-8696
BBS: +(813) 874-3078 (28.8kb V.34)
CompuServe: 76576,2003
Internet: info@paccomm.com
Orders: (800) 486-7388
(2 lines, 24 hr. Voice Mail)

PacComm's latest firmware including PacComm's famous Personal Message System local mailbox. GPS (Global Positioning System) firmware features supplied as standard. NMEA command structure compatible. Uses any NMEA GPS output string to place latitude, longitude and satellite availability into CText, LText, SText, etc.

Comes with active 45 dB gain antenna (mag-mount) which makes it more sensitive than hand-held units.

A differential GPS version available at extra cost. Unit monitors packet channel for DGPS updates while also transmitting its own position.

WA6WGL

QSL - circa 1975

ly send out QSL cards soon moved me from a 'Big Gun' in RTTY DX to a 'Small Bore.'

Going over my first RTTY Contest Log was interesting, if only to see just how few call-signs still show in my 94 Callbook. Some, of course, may have changed calls.

Even though I am 11 or 12 years shy of being an 'original' RTTY-er, I did beat by nearly two years the advent of truly global RTTY. That was when Asia appeared in the form of Japan (KA9AK). In the time the mode has run the gamut from machines to dedicated terminals to computers. Tubes gave way to solid state, not only in TU's but transmitters and receivers as well. Even Baudot may fall to other forms of copy. In the time it takes me to do one contest exchange, the amateur with state-of-the-art equipment makes from two to four exchanges. And probably gets better copy to boot! The TU's graduated from several revisions of the

	DATE TIME	STATION CALLED	CALLED BY	HIS FREQ. OR DIAL	HIS SIGNALS RST	MY SIGNALS RST	FREQ. MC.	EMISSION TYPE	POWER INPUT WATTS	TIME OF ENDING QSO
		1965		MC	RTTY Contest			F1	250	All
	20 Meters			21						
28	1835	VE3IR	X		579					10
29	1854	KP4AXM			479					10
30	1905	W6LDE	X		599					2
31	1915	K9OXA			599					2
32	1920	W6WIE/M			589					2
33	1945	KL0DQ			599					2
34	2007	VE3BIJ		21	589					10
35	2014	WA4EGY		21	569					2
36	2030	WA2MOV		14	569					2
37	2100	VE3BIN			569					10
38	2124	K8JTT	X		589					2
39	2127	W8CQ			599					2
40	2139	W7CBY	X		599					2
41	2145	W3KDF			579					2
42	2246	WA2RVJ			599					2
43	2253	FG7XT	X		589					10
44	2312	W1GKJ			589					2
45	2331	W6JIE/M			579					2
46	2346	K8MYF	X		599					2
	21 March									
47	0024	W4MGT			589					2
48	0045	YV5AVW			589					10
49	0052	KG4CG			569					10
50	0143	KL7DTR			599					10
51	0148	KH6AX			599+					10

	DATE TIME	STATION CALLED	CALLED BY	HIS FREQ. OR DIAL	HIS SIGNALS RST	MY SIGNALS RST	FREQ. MC.	EMISSION TYPE	POWER INPUT WATTS	TIME OF ENDING QSO
		RTTY Contest		MC		BARTG		F1	250	1965
	20 Meters									
1	0207	KL7CWO		14	599					10
2	0214	K9OXA		14	599					2
3	0221	W7ERA		14	559					2
4	0232	ZL1WR	X	14	479					10
5	0327	KP1BG		14	479					10
6	0305	WZ2RVI		7	589					2
7	0424	WA6PUA		7	589					2
8	0441	W3KDF		7	589					2
9	0511	FG7XT	X	7	589					10
10	0528	KP2EV			579					2
11	0542	K1VGW/MM			589					2
12	0556	KP4AXM			579					10
13	0609	K3GIF			579					2
14	0654	KG4CG		7	589					10
15	0730	KL7DTR		3.5	599					2
16	0738	WS0LV			599					2
17	0747	KL6MPM			599	FG7XT	45,030 QRG			2
18	0752	W7HEA			499	KP4AXM				2
19	0803	WB2GUS			589	K8MYF				2
20	0813	W6EV			599	WA2RVI				2
21	0816	W6WLJ			599	W3KDF				2
22	0843	K8MYF			579	W3RVJ				2
23	0852	W0MPF			599	W0MPF				2
24	0915	VE7XY			579	VE3BIJ				10
25	0932	W6MTJ			599	W1GKJ				2
26	1812	FG7XT		21	589	VE3IR	22,260 QRG			10

Band conditions were quite good in that era and almost everyone in the world was quite active on the bands. My first SA station was YV5AVW, OC was KH6AX, EU was DL3IR (still in the callbook), all in January 1965. AF was EL2F in the '66 BARTG and my last continent AS didn't come until March '67 with KA9AK.

My rigs have ranged from the Challenger kit through a Valiant, a Multi-Elmac AF68, a giant SRT15 Ex-Navy rig resurrected from a junkyard, a Drake TX4 . . . and then I switched to a TS930 and gave up the radios that 'glow in the dark.' The RTTY went from a Model 26, Model 115/14 and/or 19 to my present Model 28ASR. The TU's from several revisited home-brews to a TTL/2 to my Dovetron. The main DX antenna is a 30 year-old TGHDX.

By now it is obvious that I am a dinosaur. I think the Commodore 64 in the shack is over 10 years old, along with an Airdisc and an MFJ-1224 interface. Frankly, I could never get it working (never did find the the CR or LF function), so I slowed down from my already less-frequent operating so as to utterly destroy my once excellent typing. This, combined with my failure to prompt-

MARK III, a TTL/2 to the Dovetron I now use. I enjoyed it!!! The frequent appearance of old 'Murphy' notwithstanding. And notwithstanding the building your own TU's, the feeling of being a masochist during a contest, keeping the Model 26 running perfectly, and the Model 28 running . . . all these notwithstanding, God knows, I did enjoy it.

My apologies to those who put up with my poor typing during the later years, and to those whom I slighted by my failure to send QSL's they so deserved. After so many, many contests—the original Sweepstakes sponsored by the SoCal RTTY Society (of which I was a member), the Volta's and the Flash'es, the Corona's and the CARTS's, the SARTG's and, above all, the 30 BARTG's. And I won't mention the ones I didn't enter. Now I think it is time to steal away into the woodwork. Maybe I'll grow tired of contemplating my navel and return to the green keys (I wonder how many even know what the phrase means!). Hopefully I'll show up again. If not, best 73 to all of you.

de Bob WA6WGL

(Oooops - The LX-Land Award as reported in the June issue had 1996 dates - they should have been 1995 as revised below - ed)

New award offered from LX-land

CULTURAL CITY OF EUROPE 1995 AWARD

The CULTURAL CITY OF EUROPE 1995 AWARD is the official diploma issued by the Reseau Luxembourgeois des Amateurs d'Ondes Courtes (RL), founding member society of IARU, to celebrate the fact that the capital city of Luxembourg has been chosen cultural city of Europe during the year 1995.

The award is available to radio-amateurs and short-wave listeners. It is issued to those, who have contacted or heard Luxembourg amateur radio stations between January 1, 1995 and December 31, 1995.

Stations must score at least 96 points.

Each contact with an LX-station counts: 10 points for Europeans
20 points for non-Europeans

Each contact with a club-station counts: 16 points for Europeans
30 points for non-Europeans

Valid club-station call-signs are: LX95VEC, LXORL, LXOITU

Each LX-station may be counted only once on each band independent of mode. There are no restrictions regarding band or mode.

Fees: 12 IRC's, 300 LUF, 10 USD, 16 DM.
Other forms of payment will not be accepted.

A GCR-list including date, hour, call, frequency and mode for each contact, certified by the Award Manager of the local IARU society, a club official, or two licensed radio-amateurs should be sent to:

Award Manager LXITI Carlo
P.O.Box 1352, L-1013 LUXEMBOURG, LUXEMBOU RG(Europe)
also include a self-adhesive label with your address, before December 31 1995.

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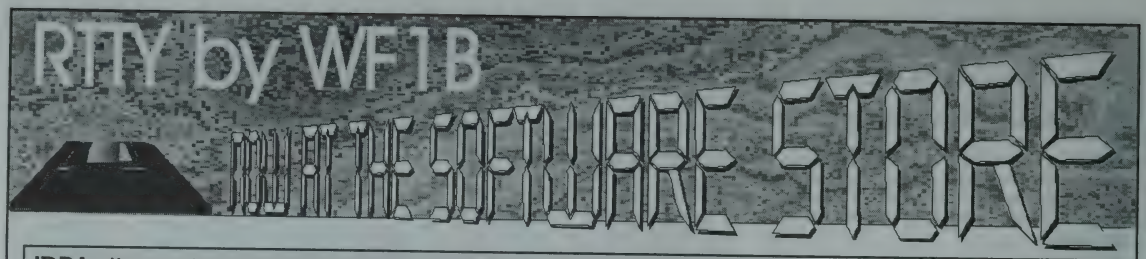

IDRA, through arrangements with Wyvern Technology, Inc. is proud to announce the addition of **RTTY by WF1B** to its offering of quality products for the digital operator.

RTTY by WF1B incorporates many advanced features which create the ultimate contesting tool for novice and expert alike. Imagine seeing a callsign appear on your screen, then with one keystroke(or mouse click), dupe-check, country-id, multiplier-id and answer him! This is the life isn't it? Enter (or mouse click) the exchange information, then log, score, and QRZ with one keystroke (or mouse click). It really is this easy. Enter one command to generate all paperwork needed by the contest sponsor. You'll never have to spend hours doing paperwork again. Suppose you like to search and pounce? As you tune in the signal, this software will tell you if it is a needed multiplier(or double, triple multiplier) or let you know that he is already worked. Top contestors and casual ops alike have used RTTY successfully to increase their scores and their enjoyment of RTTY contesting. Shouldn't you?

Program Features
The primary user screen is split 3 ways: a receive, log, and current QSO window. • On-line help is always available • User Modifiable country list • Complete Contest Entry Generation
• Installation Program gets you off to a good start
• Fully supports Color or Monochrome Monitors

Contests Supported
• ARRL RTTY Roundup(Jan)
• ADRS WPX Contest(Feb)
• BARTG RTTY (Mar)
• VOLTA RTTY (May)
• SARTG RTTY(Aug)
• CQVVW RTTY(Sep)
• JARTS RTTY(Dec)
• TARA Sprint(Dec)
• DXpeditions

Operation Features
• Automatic Capture of Callsign
• Automatic Dupe Checking
• Automatic Identification of Country
• Automatic Multiplier Identification
  - State/Province
  - Country
  - CQ Zone
  - Districts
  - Continents
• Mouse support provides point and click • Partial call search • Super Check Partial • Friend file for custom buffers • 11 programmable buffers with user definable buffer tags • Scoring for each contest • DXCC Status tracking

Other Features
Any software controllable TNC can be used if the software commands are documented!! • Kenwood Radio Control
• Complete serial port support COM1-COM8, all IRQs.

Tnc's Supported
• HAL P38
• HAL PCI-4000
• HAL PCI-3000
• AEA PK-232
• AEA PK-900
• MFJ-1278
• KAM Allmode
• AMT-1
• Kantronics UTU
• Terminals (e.g. Heath HD3030 or ST5 style)

Display Windows
Score Summary Window • CQ Zone Map
• The States/Province Map • The Country Map Prefix List
• Country List • DXCC List • Of course, the Help Window
• 25/43/50 line support for capable monitors

Printed Output creates ALL sponsor required paper work:
• Dupe Sheets
• State/Province Multiplier Sheet
• Country Multiplier Sheet Log Sheets
• District Sheet
• Continent Sheet
• Score Summary Sheet

User Comments
"thanks for providing the ham community with such superior RTTY contesting software!" de ON4UN "made the pileups a breeze to handle" de K0EU(of AH1A & 9G1XA) — "Totally innovative concept" de A22MN —"best $ I have spent on software in a long time" de WA4OSR -"The best word to describe version 2 would be bullet-proof" de AA4M/0 —"No more paper logging for me" de N0FMR —"This is the program for RTTY contestors" de N4ROL "Made it easier for me as a new RTTY operator" de VE71N — "Fantastic piece of software, easy to learn" de VE3FJB

Included Utilities
• QSL label generation - provides method of generating many labels for confirming contacts. • Rate Statistics - gives a brief analysis of the various rates during the event.
• Country Maintenance - a menu driven system for maintaining the country data base. Will import K1EA .CTY & .DAT format data files. • Color Modification - adjust the color scheme to your taste. • Data Export - utility provides method of getting data to various formats including: DXBase, DX-Trak, xBase, and K1EA.RES formats. A callsign only format can be used with callsign data bases to generate address labels.

Hardware Requirements
RTTY by WF1B is a DOS program requiring a PC with a min. of 640K RAM. A fixed disk is highly recommended although it will run on a floppy based computer.

Technical Support
Technical support is supplied via E-Mail, telephone, or US mail. E-Mail is the preferred method using internet address: wf1b@ids.net or secondly CompuServe 73750,2177. The phone number is (401) 823-7889; the best time to call is 6-11 pm Eastern. The mailing address: Wyvern Technology, Inc. 35 Colvintown Road Coventry, RI 02816-8509

(To order this, or other fine products please see the Software Store ad on page 27)

SOFTWARE STORE

Your Digital Information Center

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❑ EXPRESS 2.0 - for Clover

EXPRESS 2.0 Windows 3.1 software for Clover (requires HAL PCI4000 or the new P38). Send stunning full color graphics, digitized voice, run a full Clover BBS; all while using the best keyboard QSO software available anywhere. Available exclusively from IDRA. **$25.00 to members**, $50.00 all others.

❑ PakTERM - for PacComm PTC

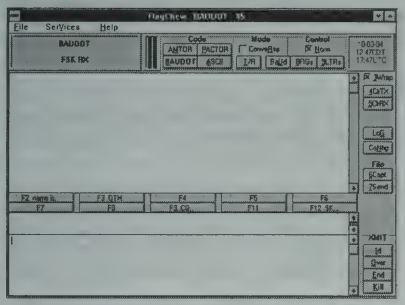
PakTERM takes your PacComm PTC to its limits while making your life easier with an assortment of automated features. You simply won't find a better DOS based PTC terminal program anywhere! **Only $30.00**

Note: Callsign and disk size required on all software orders.

❑ RTTY by WF1B - for most TNCs

This is the ultimate contesting tool for novice and expert alike. Works with virtually all software controllable TNCs. Supports all major RTTY contests and DXpeditions. Features include Automatic callsign capture, dupe checking, country & multiplier identification; mouse support and much more. **Price: $40.00**

❑ Ragchew - Windows software for your HAL PCI4000 or P38 card



Jim Jennings, KE5HE developed this exciting multi-mode Windows software for your HAL PCI4000 or P38 card. Send RTTY, AMTOR, and PACTOR from the same easy-to-use and friendly interface. Requires Windows 3.0 & DOS 6.0 or better. Available in station-license form, only from IDRA. **$25 for members.** $50 for non-members.

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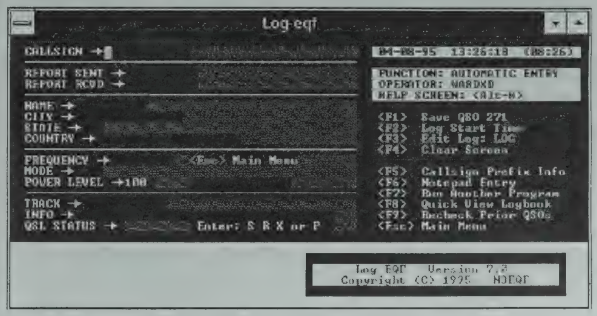
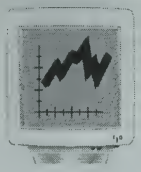
❑ Log-EQF - Your complete computer based logging system



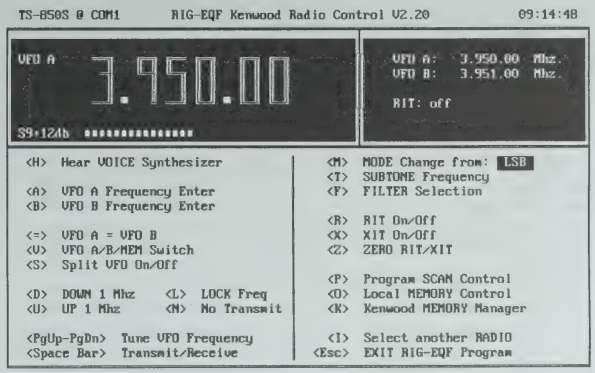
Log-EQF Version 7 is the total control center for your on-the-air activity. Features easy logging, data terminal, PacketCluster(tm), rig control, beam headings, QSL labels, DXCC, WAS, and more. Log-EQF is a DOS program that runs on any IBM-compatible PC. Also works great as a DOS application in Windows. **Registered version: $30.00.** On a budget? Order **Log-EQF-Jr. Price: $20.00.** Junior is identical to its "big-brother" less the provision for radio & TNC interfaces. Registered users of both programs also receive the File-EQF, WAS-EQF, and DX-EQF utilities for import/export and WAS/DXCC record keeping.



❑ SNAP - EZ DX propagation prediction

Propagation Prediction? With this new DOS utility it's a "SNAP" Instead of guessing if a radio path is open at a specific time/frequency, just call up SNAP and you'll quickly know where and when to make that QSO. Written by Crawford Mackeand, WA3ZKZ exclusively for IDRA. **$15.00 for members.** $30 for non-members.

❑ Rig-EQF - comprehensive control of your *KENWOOD* Rig



Various radio parameters can be controlled and monitored via your computer, increasing the power and flexibility of your station. Includes large digital display, S-Meter/Power output display for rigs with this capability, sophisticated, programmable scanning & much more. **Price: $20.00**

❑ RS232C & Com Ports Booklet

If you are using a computer in conjunction with ham radio, you will find this booklet an invaluable tool to have in your shack. The booklet contains information about COM ports 1,2,3,4 as well as RS-232C. **Price: $5.00.**

❑ Basic Packet Radio Book - (2nd Edition)

New in the 2nd edition — updated information based on the comments and suggestions of readers including a chapter on operations via Internet Wormholes and & LAN-LINK 2.30 documentation. What packet radio is. What it takes to use it. The Local Area Network (LAN). The Packet Bulletin Board System (PBBS) and how to use it. How to Send and Receive Messages & Bulletins. The distributed LAN. Extending your range via Nodes. Packet Clusters. Servers: Dumb and smart. ELMER The ham's expert system. LANLINK manual and evaluation disk. **Price: $29.95**

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~~Parting is such sweet sorrow!~~ Whoops! Shakespeare had it all wrong. I am staying, remaining, hanging in there, coming up for another 15 rounds . . . false rumors to the contrary notwithstanding! And I was happy to accept the IDRA Board's offer to remain in charge of the Digital Journal's content, this time as Editor-in-Chief, a title bestowing on me a bit less glory and considerably less work and responsibility than my previous title as Publisher (a title often used as a vehicle to dump all the available work on one person!). I want to edit, to help people write, to write, to recruit people who want to write and to help shape what some of us see as a magazine with a very bright future. There was too little time for this kind of 'bottoms-up' editorial development under the old scenario. I thank the IDRA board for offering me such a wonderful opportunity. So, HI HO, it's back to work we go . . . but not before these comments.

The 'new' ADRS makes its statement in this issue. The facts jibe with those in the IDRA announcement found on Page 4. Warren W2NRE president of the new association feels strongly that a one-issue organization is the appropriate method to create and maintain "A forum for digital technology." His compatriots apparently agree. As stated, they were so convinced of it, they voted to sell the Digital Journal. This single-mindedness perhaps arises from the fact that each of the departing directors sees Amateur Radio through the eyes of the dedicated HF BBS operator. This narrow view perhaps fails to understand where the bulk of the keyboarders of the world spend their time. In any event, we wish the ADRS well.

The "forum" is at the core of IDRA's organization as well, but the execution of the concept differs, substantially. As an example, the IDRA feels that, short of having a group of wise men (a forum) in serious and continuous discussion around the village square (dressed in togas, of course), there must be a medium through which the forum is maintained and the information disseminated . . . or the discussion has no lasting value! The Digital Journal is the vehicle for the presentation and distribution of such information; tangible evidence that such discussions actually took place; the permanent record, the history, the reference, the benchmark against which future discussions might be measured. But there is more to the "forum" than mere discussion, for digital radio must be *practiced* and not merely discussed or automated. Technology inherently isolates us in its lonely cocoon unless we maintain some sort of contact with humanity through our keyboard applications. Thus contesting and DX-ing and chatting and file transferring and sketch-swapping all become part of the living fabric of IDRA and its members. Members, IDRA members, who need software and books to help them become better able to man the keyboard, who want to have more fun and to build new friendships, who also want to enjoy digital seminars, who need to download important files from the landline BBS and who want to learn about and explore the vastness of the IDRA Internet Gateway. And there will be more, much more. Yet all of the peripheral activities, both now and in the future will (even if the most outlandish forecasts of electronic journalism come to pass) in all likelihood remain in orbit around the news and views and digital information appearing in print in these few pages each month, the pages we call the Digital Journal. There is no IDRA without it!

Those of us who help fulfill this charter take this charge very seriously and willingly take responsibility for maintaining and improving the "forum" and all of its elements. But we cannot do it alone. We ask, indeed encourage you to begin a more active participation now. What you have to say, whatever talent you have to lend to IDRA is a wasted asset unless you apply it regularly to one or more of the "forum's" many and varied activities.

++++++

Let me speak a moment about this undertaking before we leave the subject. The Digital Journal is a tough but fulfilling assignment, and I like every minute of the task. Even with no compensation it is one of the most rewarding tasks ever! This affection is tempered, however, with a keen sense of what the Journal is all about and what it stands for. My thoughts are in plain view in the following paragraphs. When looked at one way, these words could be an editorial platform. From a manager's point-of-view maybe a mission statement. Either way, these words are of some moment to me. I mean every word. I trust all who write on these pages, and all others associated with this magazine, as well as the "forum," agree with me.

- **The Digital Journal aims to be the primary resource for news, views and knowledge for amateur radio digital *keyboarders* around the world.**
- **The Digital Journal is the property of the members of IDRA collectively, and is not 'owned' by any single group, the Digital Journal staff, members of any one country or fans of any single mode or interest . . . nor by the Board of Directors.**
- **The Digital Journal publishes opinions on diverse and controversial points-of-view (and solicits yours) so long as they are in acceptable form, enlighten the reader, are in good taste and defame no individual.**

These views offended some in the past, or at least the perceived result of such radical thoughts did. But there can be no compromise. If IDRA is to grow as a group worthy of its membership, the organization must flourish in an open environment, and the Journal must provide it. Our members, readers and friends deserve nothing less.

Enuf!! Let us face tomorrow for it represents unlimited opportunity . . . if we but climb above our self imposed limitations. Goethe said it right, "Let everyone sweep in front of his own door and the whole world will be clean."

+++++++

Don't miss this opportunity, this bargain. CompuServe has entered the Internet arena is a most impressive way. I guarantee it will take you longer to download the free software than it will take you to get the program installed and get you on the World Wide Web Page of IDRA! It's very easy. Logon CIS and type GO NET-LAUNCH. Read the installation instructions and then download the 1.2 Megabyte program. Install it according to the directions (it becomes part of Wincim or whatever software you are using). Then bring up Spry Mosaic and click File in the upper left hand corner, click Open URL and type in <http://www.iea.com./~adrs>, and you are there! The software, like all of the Mosaic versions I have seen, is very user friendly.

CIS gives you 3 free hours of connect time each month in their Standard Pricing Plan, then charges $2.50 per connect hour beyond that. You can also get 20 hours for $15 per month. I have already cancelled my regular Internet server, and will stick with CIS because of their E-mail service (of which I am one of their busiest users!). Prodigy and AOL are doing pretty much the same thing, I guess. Before you sign up for a second service, check out your options. You probably don't need one.

Speaking of the explosive world of telecommunications, CQ Magazine has gone online. You can buy anything in their library by registering with them via the following addresses: CQ@genie.geis.com, CQMagazine@AOL.com, NW2L@AOL.com, CIS 72127,745 or p00259@psilink.com.

They are not the only commercial entity on the Internet. Good friend Ian G3EAN calls our attention to the following bulletin he received in a mailing from UCSD.EDU (I won't give the address of the sender):

'This is for those with no license and living in or around Houston. This course will get you a no-code license.

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RS-232C and COM PORT booklet: This is a compilation of all articles published in past issues of the RTTY Journal on these two very important topics. If you are using a computer in conjunction with Ham Radio, you will find this booklet an invaluable tool to have in your shack. The booklet contains information about COM ports 1,2,3 and 4 as well as the RS-232C information. Send $5.00 to the IDRA, PO BOX 2550, Goldenrod, FL 32733 and you will receive a copy of this invaluable booklet by return mail, postage paid.

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There you have it. Ian frets about this sort of thing and says, "What would happen if some of the UK guys try access the Internet via the USA?" And I say in return, I'll bet someone has figured that out already. I'll bet the wormhole between London and New York provides more than one UK packet operator access to the Internet via a TCP/IP node right now. Be sure and read the "IS THIS RADIO" note elsewhere in this month's Journal and wonder, with me, how genuine those calls and callsigns and RF links might be. Ah, the joys of the Internet!

Johannes DJ1IJ awaits Express 3.0 (along with a lot of other people) as he bemoans the scarcity of Clover QSO's in Europe. With Fred DK4ZC in the hospital (since released and back in Finland), things are "very quiet." Yet, he has worked 17 countries on Clover and had a one-way link with ZF1, but couldn't complete it. He is also working on a ZL contact but propagation is fighting him all the way. Hi note also brings up two other subjects.

Express 3.0, according to the latest bulletin from TY1PS, is probably going to be shipped in July (just a few weeks ahead of Windows 95!). It is, as I write these notes, in final form. After a bit of testing it will be ready to go, so get your order in now. The upgrade is $25 for all registered users, $50 for new users.

HAL's P38 is creating waves, too. As users spring up around the world, reports from them soon circulate. Watch the landline networks and you'll pick up commentary. Some are quite flattering. Most comment on its superior Pactor performance, "better than the PCI-4000." AMTOR and RTTY work equally well, or so they say.

One source checked the P38 thoroughly and found, for example, that in Clover FEC the card transmits up to 8PSM but can receive 8P2A and 16P4A with no problem. Interestingly, the PCI-4000 had two link methods, the P38 only one, the 'robust' link. The short, quick bursts of the normal link do not exist. And, finally, that FSK tones and shifts are fixed and cannot be adjusted as they can on the PCI-4000. On balance, this operator says "The P38 works very well, a lot better than the PCI-4000 on FSK." Stay tuned for more information on this important new product. (HAL reports a fix on the way for the PCI-4000 and it may ship by the time you read this-ed).

David KK4WW and XYL Gaynell KD4GM (director and vice-director of FAIRS) were in China in late May. You may have heard them operating as */BY1QH. They have hopes of getting permission to set up an active FAIRS group in China before they leave. While there they lectured at Tsinghua University under the auspices of Chinese Radio Sports Association. Note the other news from FAIRS in the Digest section of this issue. Remember, they deserve your support.

Danny G3XVR's career has been as a professional in the field of radio communications. But he has amateur interests as well. He read about JA1ACB's concept of narrowband RTTY and has already thought seriously about a mode that is "effectively coherent FSK with a 10 Hz shift." Hopefully he will turn his letter into a full-fledged article soon. You'll find it very interesting. See next month's Journal.

OOOPS! The BARTG broadcast schedule reported in this column last month is operative only during the first week of the month, not every week. And the Internet address of GB2TAG is <iain@ humber.ac.uk>

Cliff W6HDO tells a tale not to be forgotten. Long a seagoing radio officer (with lots of AMTOR experience on the side), the story of his last trip aboard his ship sounds like the introduction to an adventure novel. "The final voyage of the CHEVRON CALIFORNIA left Long Beach, CA on January 29, 1995 for a remote part of India near Pakistan. If you have an atlas handy look in the Gulf of Cambay near 22N, 72E. This area is similar to the Bay of Fundy with 35 foot tides but with gentle mud banks. The scrapping of the ship is a simple but highly emotional experience in that the vessel is beached at full power and high tide until the propeller is stalled. At this time the steam overloads vent with a great roar and make the ship's whistles announce the demise. Even the most hard-hearted of the sailors have a suitable tear in the eye."

He goes on to tell about the long trek home via tugboat, bus ride and, finally, jet. Sorry to say he doesn't have any pictures of the event. We will be hearing more from Cliff soon, now that he has chosen a career that will keep him home at Morro Bay, CA, and now that he will be experimenting with CCW and Satellite digital.

I love surprises. And one of the most pleasant is the discovery of a great new quote. While I don't like the idea of searching CD-Roms for them, I do have two pop up on my screen each day, at random. Yesterday's was a thought-provoking gem. It came from Bookshelf '95 from Microsoft (which because it is in the Startup menu pops up when I open up MS Word 6). Read this old Yiddish proverb, and then stop and think about it for a moment: **"The girl who can't dance says the band can't play."**

No Clover on the air? Here's what happens when you can't make a regular weekend schedule. Since I am still wrestling with the antenna-in-the-attic in the house-in-the-valley problem I didn't make my sked with Peter TY1PS. So what did he do? He worked the following on Clover—-DL, HB, EA, A41, OH, W6 and W2. Not too shabby! Stick with the calling frequencies and you will find them. 14065.5 seems to be the best bet in the US and 14066 in Europe. Are they standards that should be widely publicized? Let's hear from you Clover operators now.

A bulletin at the last minute! Link now with a Moscow page on the Internet. All you need to do to link with Victor's (RX3DIN) Web page is to link with the IDRA page and click the appropriate box. No problem. Welcome Victor.

73 de Jim N2HOS sk

(The Contest Chair - cont'd from page 11)

running around like a chicken with his head cut off most all weekend. Unlike most station owners that will just show you where everything is and how to use it, he would do anything and everything. He would even be a gofer, if you needed something to drink he would "go-fer-it", or anything else you needed. He would operate as long as he was needed on any band or until you were back from a break, whatever it took he was the man that would do it. John was on the go the whole weekend and still managed to get his share of QSO's at the same time. I might add, that EVERYTHING was working like a (Swiss) watch (other than the 80mtr beam being fixed on Europe) the whole weekend. It was a real pleasure to operate at John's station. I hope to do so again some time soon.

Highlights of the weekend—for me it would be the Europe runs with very few U.S. calls in the logs, hour after hour. After the contest PI4COM called Ray on the phone. During their conversation it was brought to Ray's attention that K1NG was 4 to 5 db's louder on 80mtrs than W3LPL was into Europe. It was a darn shame the 80mtr beam was fixed on Europe and couldn't be rotated. No telling what we could have done on 80M, if we could have rotated the beam!

We finished CQ/DJWW'94 RTTY Contest, with a score of 2271 QSO's, 229 QTH's, 281 DX, 100 Zones for a Score of 2,750,853. After the contest we heard W3LPL score so John went and dug out the Champagne for a Victory Drink. From the looks of things at this time, the effort was worth while.

Several months later Ed W3EKT sent me a letter, giving us an un-offical congratulations for our efforts. I appreciated that, but got the feeling he would like us to try it again! Maybe we will sometime. I think it would be a lot of fun if we could find a big station on the East Coast and go toe-to-toe. WOW what a war that would be. I'll be looking around..

I would like to think John for letting us invade his house and do CQWW'94 at his station. We had a blast, especially me..

Until next time, 73's de Ron AB5KD

"Remember" . . . Big antennas high in the sky, work better than little ones close to the ground...

[1]Originally the ADRS WPX, it will now be known as the IDRA WPX-Ed.

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A K-Net™ Node and a TNC at the Same Time!

Another Kantronics Packet Innovation

by Phil Anderson, WØXI

In the past few years, networking has become a subject of interest to amateur radio operators. The defacto standard networking protocol, NET/ROM, was developed in the late 1980's by Software 2000, Inc. Since then, other node derivatives such as TheNet, TheNet Plus, TheNet X1-J, and G8BPQ have evolved. Although these variants differ in their features, they all utilize the same basic networking protocol.

Historically, once node firmware was placed in a TNC, that TNC ceased to be accessible as a regular terminal-based packet unit. That's fine if you want to dedicate the unit to a node stack or place it in a remote location. However, wouldn't it be nice if you could provide a NET/ROM™ or TheNet compatible node at the edge of the network and be able to use your packet unit as both the node and your TNC? You can do just that with the KPC-9612 or KPC-3 with K-Net installed.

The KPC-9612 optional K-Net PROM adds the function of a dual-port network node to the operation of your KPC-9612. All original features of the unit are retained, including your PBBS, simultaneous dual-port keyboard operations, and remote access. This means that you can still use the KPC-9612 as you do now, and once you've installed the K-Net PROM, provide your local area with a dual-port network node that operates in the background of your traditional TNC operations! K-Net is fully compatible with the basic network protocol and provides both a 9,600 baud port and a 1200 baud port that can be added to existing networks. The 9,600 baud port can be used for direct server access and/or a backbone node, while the low-speed (1200 baud) port is available for user access to servers and other LANs in the area.

The KPC-3 optional K-Net PROM adds the same node functionality but, of course, establishes a single-port node. And while the KPC-9612 has enough PROM memory space to support both traditional and K-Net operations, the KPC-3 must yield a few features to allow for K-Net: on-line help messages, the new-user command set, and GPS commands. However, all other functions of the KPC-3 are retained, including your PBBS and remote access, while you've gained a networking node!

In addition, both the KPC-9612 and KPC-3 K-Net implementations support node stacking; that is, you can attach an additional node-equipped TNC to the serial ports of these units. In this case, the units are configured to 'talk' the NET/ROM interface protocol - a TNC node attached to another TNC or PC-based node.

So whatever you prefer, whether it is a TNC and a node all in one or a stack of nodes for a powerful local area network, Kantronics has utilized the basic protocol and taken the packet networking technology one step further. Now available as an option in the KPC-3 and KPC-9612, K-Net will prove to be a powerful resource for packet networking.

K-Net is a trademark of Kantronics Co., Inc
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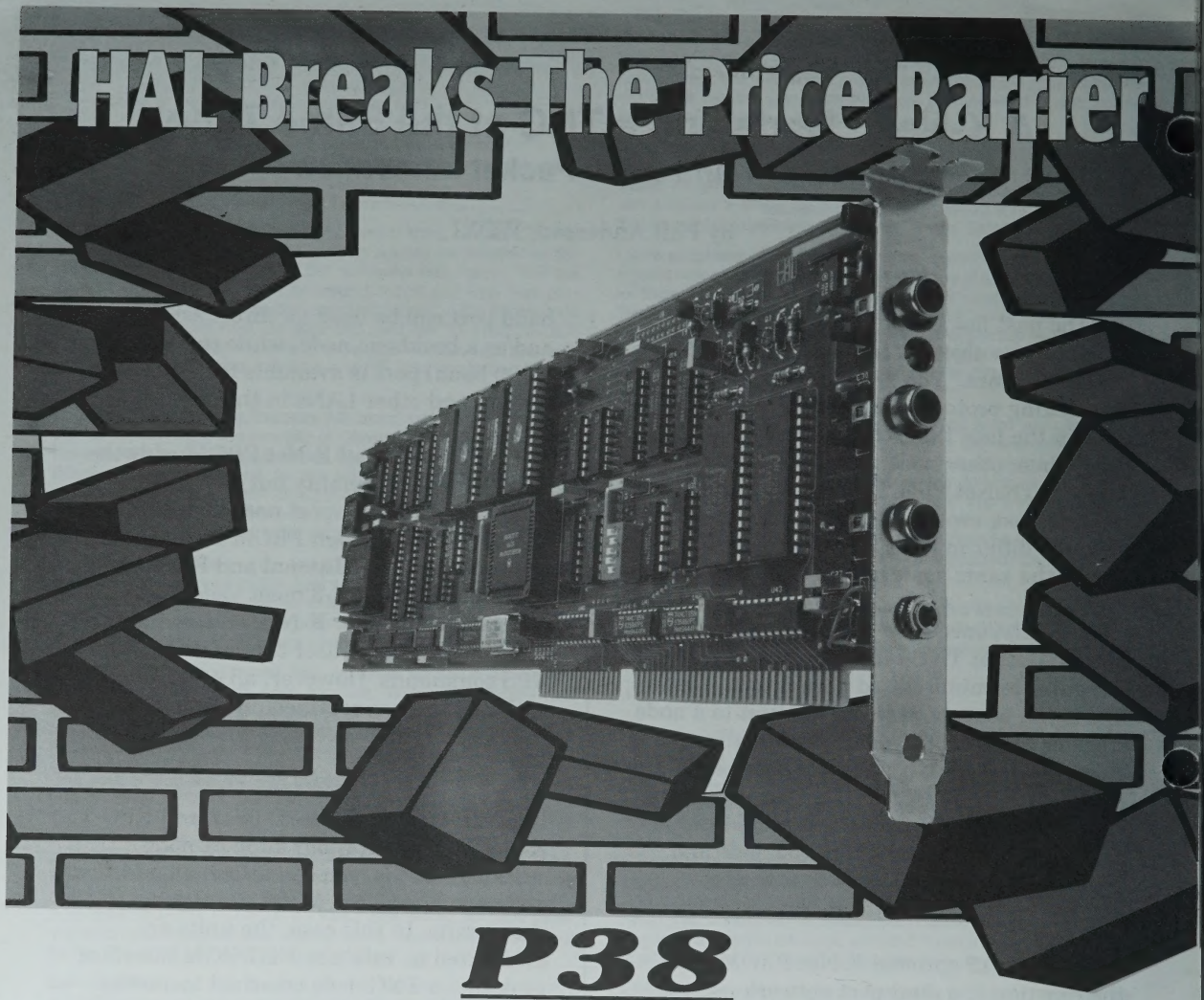

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